STIC Search Report
EIC 1700

STIC Database Tracking Number: 155303

TO:	From:
Camie Thompson Location: REM 10D28 Art Unit : 1774 June 15, 2005 Case Serial Number: 10/635777	Usha Shrestha Location: EIC 1700 REMSEN 4B28 Phone: 571/272-3519 usha.shrestha@uspto.gov

Search Notes

Access DB# 155303

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Carrie S. Thompson Examiner # : 79244 Date: 6/2/05
Art Unit: 1774 Phone Number 30 571-272-1530 Serial Number: 10/635,777
Mail Box and Bldg/Room Location: Rem 10D28 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Inorganic electroluminescent device + method

Inventors (please provide full names): Akiyoshi Mikami

Earliest Priority Filing Date: 8/7/02

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Please do a search on claims 1-14.

Thank you.

Best Available Copy

****

STAFF USE ONLY

Searcher: Usha
Searcher Phone #:
Searcher Location:
Date Searcher Picked Up: 6/15/05
Date Completed: 6/15/05
Searcher Prep & Review Time: 60
Clerical Prep Time: 30
Online Time: 150

PTO-1590 (8-01)

Type of Search

NA Sequence (#)
AA Sequence (#)
Structure (#)
Bibliographic
Litigation
Fulltext X
Patent Family
Other

Vendors and cost where applicable

STN $414.79
Dialog
Questel/Orbit
Dr.Link
Lexis/Nexis
Sequence Systems
WWW/Internet
Other (specify):

STIC Search Results Feedback Form

USPTO

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher or contact:*

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art* ***found****, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art* ***not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

10/635,777

WHAT IS CLAIMED IS:

1. An inorganic electroluminescent device comprising in the following order:

an underlayer formed of a first compound semiconductor of Group IIa-VIb; and

a light emitting layer formed of a second compound semiconductor of Group IIa-VIb,

said first compound semiconductor and said second compound semiconductor having the same crystalline structure.

2. The inorganic electroluminescent device according to claim 1, wherein said first compound semiconductor and said second semiconductor have a rock-salt structure.

3. The inorganic electroluminescent device according to claim 1, wherein said first compound semiconductor and said second compound semiconductor have an orientation in a <100> direction.

4. The inorganic electroluminescent device according to claim 1, wherein the bandgap of said first compound semiconductor is larger than the bandgap of said second compound semiconductor.

5. The inorganic electroluminescent device according to claim 1, wherein said first compound semiconductor contains magnesium and sulfur, and said second compound semiconductor contains magnesium and sulfur.

6. The inorganic electroluminescent device according to claim 5, wherein said second compound semicondutor further contains calcium.

7. The inorganic electroluminescent device according to claim 1, wherein said second compound semiconductor contains $Mg_{1-x}Ca_xS$, and the Ca composition ratio x is $0.1 \leqq x \leqq 0.15$.

8. The inorganic electroluminescent device according to claim 1, wherein the thickness of said underlayer is not larger than 500 nm.

9. The inorganic electroluminescent device according to claim 8, wherein the thickness of said underlayer is not larger than 200 nm.

10. The inorganic electroluminescent device according to claim 1, wherein the thickness of said light emitting layer is larger than the thickness of said underlayer.

11. The inorganic electroluminescent device according to claim 1, wherein said light emitting layer contains a rare earth element or a transition metal element as a substance acting as a luminescent center.

12. The inorganic electroluminescent device according to claim 11, wherein said substance acting as the luminescent center is an element selected from the group consisting of europium, cerium, and manganese.

13. The inorganic electroluminescent device according to claim 1, wherein said second compound semiconductor contains $Mg_{1-x}Ca_xS$, and Eu is doped into $Mg_{1-x}Ca_xS$ as a substance acting as a luminescent center, and the composition ratio of Eu to Mg is not larger than 0.1.

14. The inorganic electroluminescent device according to claim 13, wherein the composition ratio of Eu to Mg is not larger than 0.01.

15. A method of fabricating an inorganic electroluminescent device, comprising the steps of:

forming an underlayer principally composed of a first compound semiconductor of Group IIa-VIb; and

forming on said underlayer a light emitting layer

principally composed of a second compound semiconductor of Group IIa-VIb having the same crystalline structure as that of said first compound semiconductor and doped with a substance acting as a luminescent center.

16. The method according to claim 15, wherein

said step of forming a underlayer comprises the step of forming said underlayer at a first temperature, and

said step of forming a light emitting layer comprises the step of forming said light emitting layer at a second temperature higher than said first temperature.

17. The method according to claim 16, wherein

said first temperature is not higher than 100℃, and said second temperature is higher than 100℃.

18. The method according to claim 16, wherein

said second temperature is not lower than 150℃ nor higher than 350℃.

19. The method according to claim 15, wherein

said first compound semiconductor contains magnesium and sulfur, and said second compound semiconductor contains magnesium and sulfur.

20. The method according to claim 19, wherein said second compound semiconductor further comprises calcium.

```
=> d his

     FILE 'HCAPLUS' ENTERED AT 13:40:38 ON 15 JUN 2005
L1             1 S US20040032203/PN
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 13:41:08 ON 15 JUN 2005
L2             6 S E1-E6
L3             1 S 119537-26-7/RN
L4             1 S 656222-29-6/RN
L5             1 S 12032-36-9/RN
L6            16 S (MG(L)S)/ELS(L)2/ELC.SUB
L7            18 S (MG(L)CA(L)S)/ELS(L)3/ELC.SUB
L8            16 S (MG(L)CA(L)S(L)EU)/ELS
L9             0 S (MG(L)CA(L)S(L)EU)/ELS(L)3/ELC.SUB
L10            1 S 7440-53-1/RN

     FILE 'HCAPLUS' ENTERED AT 15:21:18 ON 15 JUN 2005
L11           16 S L3
L12            1 S L4
L13           29 S L7
L14            4 S L8
L15           33 S L11 OR L12 OR L13 OR L14
L16          866 S L5
L17          878 S L6
L18          878 S L16 OR L17
L19           12 S L15 AND L18
L20            5 S L19 AND (?LUMINES? OR LIGHT? ?EMIT? OR LUMINES? OR LE
L21          166 S L18 AND (?LUMINES? OR LIGHT? ?EMIT? OR LUMINES? OR LE
L22           98 S L18(L)(?LUMINES? OR LIGHT? ?EMIT? OR LUMINES? OR LED)
L23           79 S L22 AND OPTIC?/SC
L24           28 S L23 AND DEV/RL
L25           15 S L24 AND LAYER?
L26           65 S INORG?(A)?LUMINES?(L)DEVICE?
L27           42 S L26 AND OPTIC?/SC
L28            1 S L27 AND ((MG OR MAGNESIUM) AND (S OR SULFUR))
L29            1 S L27 AND ((MG OR MAGNESIUM OR CALCIUM OR CA) AND (S OR
L30           24 S L27 AND LAYER?
L31            7 S L30 AND MAGNE?
L32            4 S L30 AND CALCI?
L33            7 S L28 OR L29 OR L31 OR L32
L34           15 S L15 AND (?LUMINES? OR LIGHT? ?EMIT? OR LUMINES? OR LE
L35           28 S L34 OR L25
L36           34 S L35 OR L33
L37           10 S L19 AND (?LUMIN? OR LIGHT? OR LUMINES? OR LED OR EL)
L38           29 S L36 NOT L37

     FILE 'REGISTRY' ENTERED AT 16:02:59 ON 15 JUN 2005

     FILE 'HCAPLUS' ENTERED AT 16:04:13 ON 15 JUN 2005

=> d cost
COST IN U.S. DOLLARS                        SINCE FILE      TOTAL
                                              ENTRY     SESSION
CONNECT CHARGES                                7.17      142.30
NETWORK CHARGES                                0.18        4.44
SEARCH CHARGES                                 0.00       73.60
DISPLAY CHARGES                              191.40      194.45
                                             -------     -------
```

FULL ESTIMATED COST	198.75	414.79
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-28.47	-29.20

IN FILE 'HCAPLUS' AT 16:06:08 ON 15 JUN 2005

```
=> fil reg
FILE 'REGISTRY' ENTERED AT 16:02:59 ON 15 JUN 2005

=> d his ful

     FILE 'HCAPLUS' ENTERED AT 13:40:38 ON 15 JUN 2005
L1             1 SEA ABB=ON  PLU=ON  US20040032203/PN
                 D SCAN
                 D ALL
                 SEL RN

     FILE 'REGISTRY' ENTERED AT 13:41:08 ON 15 JUN 2005
L2             6 SEA ABB=ON  PLU=ON  (119537-26-7/BI OR 12032-36-9/BI
                 OR 132085-96-2/BI OR 50926-11-9/BI OR 656222-29-6/BI
                 OR 7440-53-1/BI)
                 D SCAN
L3             1 SEA ABB=ON  PLU=ON  119537-26-7/RN
                 D SCAN
L4             1 SEA ABB=ON  PLU=ON  656222-29-6/RN
L5             1 SEA ABB=ON  PLU=ON  12032-36-9/RN
L6            16 SEA ABB=ON  PLU=ON  (MG(L)S)/ELS(L)2/ELC.SUB
L7            18 SEA ABB=ON  PLU=ON  (MG(L)CA(L)S)/ELS(L)3/ELC.SUB
L8            16 SEA ABB=ON  PLU=ON  (MG(L)CA(L)S(L)EU)/ELS
L9             0 SEA ABB=ON  PLU=ON  (MG(L)CA(L)S(L)EU)/ELS(L)3/ELC.SUB

L10            1 SEA ABB=ON  PLU=ON  7440-53-1/RN

     FILE 'HCAPLUS' ENTERED AT 15:21:18 ON 15 JUN 2005
L11           16 SEA ABB=ON  PLU=ON  L3
L12            1 SEA ABB=ON  PLU=ON  L4
                 D SCAN
L13           29 SEA ABB=ON  PLU=ON  L7
L14            4 SEA ABB=ON  PLU=ON  L8
L15           33 SEA ABB=ON  PLU=ON  L11 OR L12 OR L13 OR L14
L16          866 SEA ABB=ON  PLU=ON  L5
L17          878 SEA ABB=ON  PLU=ON  L6
L18          878 SEA ABB=ON  PLU=ON  L16 OR L17
L19           12 SEA ABB=ON  PLU=ON  L15 AND L18
L20            5 SEA ABB=ON  PLU=ON  L19 AND (?LUMINES? OR LIGHT?
                 ?EMIT? OR LUMINES? OR LED)
L21          166 SEA ABB=ON  PLU=ON  L18 AND (?LUMINES? OR LIGHT?
                 ?EMIT? OR LUMINES? OR LED)
L22           98 SEA ABB=ON  PLU=ON  L18(L)(?LUMINES? OR LIGHT? ?EMIT?
                 OR LUMINES? OR LED)
L23           79 SEA ABB=ON  PLU=ON  L22 AND OPTIC?/SC
L24           28 SEA ABB=ON  PLU=ON  L23 AND DEV/RL
L25           15 SEA ABB=ON  PLU=ON  L24 AND LAYER?
L26           65 SEA ABB=ON  PLU=ON  INORG?(A)?LUMINES?(L)DEVICE?
L27           42 SEA ABB=ON  PLU=ON  L26 AND OPTIC?/SC
L28            1 SEA ABB=ON  PLU=ON  L27 AND ((MG OR MAGNESIUM) AND (S
                 OR SULFUR))
                 D SCAN
L29            1 SEA ABB=ON  PLU=ON  L27 AND ((MG OR MAGNESIUM OR
                 CALCIUM OR CA) AND (S OR SULFUR))
L30           24 SEA ABB=ON  PLU=ON  L27 AND LAYER?
L31            7 SEA ABB=ON  PLU=ON  L30 AND MAGNE?
L32            4 SEA ABB=ON  PLU=ON  L30 AND CALCI?
                 D SCAN HIT
L33            7 SEA ABB=ON  PLU=ON  L28 OR L29 OR L31 OR L32
L34           15 SEA ABB=ON  PLU=ON  L15 AND (?LUMINES? OR LIGHT?
```

```
                ?EMIT? OR LUMINES? OR LED)
L35          28 SEA ABB=ON  PLU=ON  L34 OR L25
L36          34 SEA ABB=ON  PLU=ON  L35 OR L33
L37          10 SEA ABB=ON  PLU=ON  L19 AND (?LUMIN? OR LIGHT? OR
                LUMINES? OR LED OR EL)
L38          29 SEA ABB=ON  PLU=ON  L36 NOT L37

     FILE 'REGISTRY' ENTERED AT 16:02:59 ON 15 JUN 2005

     FILE HCAPLUS

     Copyright of the articles to which records in this database refer
     held by the publishers listed in the PUBLISHER (PB) field (availab
     for records published or updated in Chemical Abstracts after Decem
     26, 1996), unless otherwise indicated in the original publications
     The CA Lexicon is the copyrighted intellectual property of the
     the American Chemical Society and is provided to assist you in sea
     databases on STN.  Any dissemination, distribution, copying, or st
     of this information, without the prior written consent of CAS, is
     strictly prohibited.

=> d que l37
L3            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  119537-26-7/RN
L4            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  656222-29-6/RN
L5            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  12032-36-9/RN
L6           16 SEA FILE=REGISTRY ABB=ON  PLU=ON  (MG(L)S)/ELS(L)2/ELC.
                SUB
L7           18 SEA FILE=REGISTRY ABB=ON  PLU=ON  (MG(L)CA(L)S)/ELS(L)3
                /ELC.SUB
L8           16 SEA FILE=REGISTRY ABB=ON  PLU=ON  (MG(L)CA(L)S(L)EU)/EL
                S
L11          16 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L3
L12           1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4
L13          29 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L7
L14           4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8
L15          33 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 OR L12 OR L13 OR
                L14
L16         866 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L5
L17         878 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L6
L18         878 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L16 OR L17
L19          12 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND L18
L37          10 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L19 AND (?LUMIN? OR
                LIGHT? OR LUMINES? OR LED OR EL)


=> d que l38
L3            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  119537-26-7/RN
L4            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  656222-29-6/RN
L5            1 SEA FILE=REGISTRY ABB=ON  PLU=ON  12032-36-9/RN
L6           16 SEA FILE=REGISTRY ABB=ON  PLU=ON  (MG(L)S)/ELS(L)2/ELC.
                SUB
L7           18 SEA FILE=REGISTRY ABB=ON  PLU=ON  (MG(L)CA(L)S)/ELS(L)3
                /ELC.SUB
L8           16 SEA FILE=REGISTRY ABB=ON  PLU=ON  (MG(L)CA(L)S(L)EU)/EL
                S
L11          16 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L3
L12           1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L4
L13          29 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L7
L14           4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L8
L15          33 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L11 OR L12 OR L13 OR
```

```
              L14
L16         866 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L5
L17         878 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L6
L18         878 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L16 OR L17
L19          12 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND L18
L22          98 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L18(L)(?LUMINES? OR
              LIGHT? ?EMIT? OR LUMINES? OR LED)
L23          79 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L22 AND OPTIC?/SC
L24          28 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L23 AND DEV/RL
L25          15 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L24 AND LAYER?
L26          65 SEA FILE=HCAPLUS ABB=ON  PLU=ON  INORG?(A)?LUMINES?(L)D
              EVICE?
L27          42 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L26 AND OPTIC?/SC
L28           1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L27 AND ((MG OR
              MAGNESIUM) AND (S OR SULFUR))
L29           1 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L27 AND ((MG OR
              MAGNESIUM OR CALCIUM OR CA) AND (S OR SULFUR))
L30          24 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L27 AND LAYER?
L31           7 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L30 AND MAGNE?
L32           4 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L30 AND CALCI?
L33           7 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L28 OR L29 OR L31 OR
              L32
L34          15 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L15 AND (?LUMINES? OR
              LIGHT? ?EMIT? OR LUMINES? OR LED)
L35          28 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L34 OR L25
L36          34 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L35 OR L33
L37          10 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L19 AND (?LUMIN? OR
              LIGHT? OR LUMINES? OR LED OR EL)
L38          29 SEA FILE=HCAPLUS ABB=ON  PLU=ON  L36 NOT L37


=> fil hcap
FILE 'HCAPLUS' ENTERED AT 16:04:13 ON 15 JUN 2005
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2005 AMERICAN CHEMICAL SOCIETY (ACS)

=> d l37 1-10 ibib abs hitstr hitind

L37  ANSWER 1 OF 10  HCAPLUS  COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER:         2004:651642  HCAPLUS
DOCUMENT NUMBER:          141:177468
TITLE:                    Steel containing refined inclusions for forged
                          integrated crankshafts
INVENTOR(S):              Kagawa, Yasunori; Sakamoto, Koichi
PATENT ASSIGNEE(S):       Kobe Steel, Ltd., Japan
SOURCE:                   Jpn. Kokai Tokkyo Koho, 17 pp.
                          CODEN: JKXXAF
DOCUMENT TYPE:            Patent
LANGUAGE:                 Japanese
FAMILY ACC. NUM. COUNT:   1
PATENT INFORMATION:

     PATENT NO.           KIND   DATE        APPLICATION NO.         DATE
     ---------------      ----   --------    --------------------
     --------
     JP 2004225128         A2    20040812    JP 2003-16108
                                                                    2003
                                                                    0124
PRIORITY APPLN. INFO.:                       JP 2003-16108
```

2003
0124

AB The claimed steel contains ≤0.007 weight% (not containing 0) S, ≥5 ppm Ca, ≥5 ppm and ≤0.006 weight% Mg, 0.015-0.04 weight% Al, and ≤15 ppm (not containing 0) O and satisfies 35Ca ≤ 40Mg + 1200 (the element symbols indicate their ppm contents). The steel may contain C ≤1.0 (not containing 0), Si ≤0.6 (not containing 0), Mn ≤1.5 (not containing 0), Ni ≤4 (not containing 0), Cr ≤12 (not containing 0), Mo ≤1.5 (not containing 0), and V ≤0.3 weight% (not containing 0). The steel may satisfy Mg + Ca ≥ (4/3)S (the element symbols indicate their ppm contents) and contain sulfide inclusions free from Mn. The forged steel products, e.g., crankshafts for ships, provide high fatigue strength.

IT **12032-36-9P**, Magnesium sulfide (MgS) **119537-26-7P**, Calcium magnesium sulfide ((Ca,Mg)S)
(steel containing refined Mn-free sulfide inclusions for forged crankshafts of ships)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg═S

RN 119537-26-7 HCAPLUS

CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IC ICM C22C038-00
ICS B21J005-00; B21K001-08; C22C038-06; C22C038-60

CC 55-3 (Ferrous Metals and Alloys)

IT 1305-78-8P, Calcia, preparation 1309-48-4P, Magnesia, preparation 1344-28-1P, **Alumina**, preparation 11137-98-7P, **Aluminum** magnesium oxide
(inclusions; steel containing refined Mn-free sulfide inclusions for forged crankshafts of ships)

IT 7429-90-5, **Aluminum**, uses 7439-95-4, Magnesium, uses 7440-70-2, Calcium, uses 7704-34-9, Sulfur, uses 7782-44-7, Oxygen, uses
(microalloying element; steel containing refined Mn-free sulfide inclusions for forged crankshafts of ships)

IT **12032-36-9P**, Magnesium sulfide (MgS) 20548-54-3P, Calcium sulfide (CaS) **119537-26-7P**, Calcium magnesium sulfide ((Ca,Mg)S)
(steel containing refined Mn-free sulfide inclusions for forged crankshafts of ships)

L37 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:492786 HCAPLUS
DOCUMENT NUMBER: 141:57601
TITLE: Steels with excellent heat-affected-zone

toughness for crude oil tanks
INVENTOR(S): Hasegawa, Toshihisa; Minagawa, Masaki; Usami, Akira; Shishibori, Akira
PATENT ASSIGNEE(S): Nippon Steel Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 26 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004169048	A2	20040617	JP 2002-332617	2002 1115

PRIORITY APPLN. INFO.: JP 2002-332617 2002 1115

AB The steels have compns. containing C 0.001-0.2, Si 0.01-1, Mn 0.1-2, P ≤0.02, S ≤0.01, Cu 0.01-1.5, Al 0.001-0.1, N 0.001-0.01, Ti 0.005-0.03, Ca 0.0005-0.003, and Mo 0.01-0.5 and/or W 0.02-1 weight% [Ceq. ≤0.4, Ceq. = C + Mn/6 + (Cu + Ni)/15 + (Cr + Mo + W + V)/5] and include oxide grains (containing Ca, Al, and optionally S and/or Mg at prescribed contents; definition given) with 0.005-2 μm equivalent circular diameter at d. of 100-3000/mm2. Preferably, the steels further contain dispersed grains of CaS, CuS, Ca Cu sulfides, MgS, etc. Since the dispersed grains pinning grains for austenite grain boundaries, the steels show high corrosion resistance and inhibit generation of sulfur-containing corrosion products (sludges).

IT **12032-36-9**, Magnesium sulfide **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
(grain-boundary-pinning grains; steels with excellent HAZ toughness for crude oil tanks)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

RN 119537-26-7 HCAPLUS
CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IC ICM C22C038-00
ICS C22C038-16; C22C038-60
CC 55-3 (Ferrous Metals and Alloys)
Section cross-reference(s): 51
IT 1317-40-4, Copper sulfide (CuS) **12032-36-9**, Magnesium sulfide 18820-29-6, Manganese sulfide 20548-54-3, Calcium

sulfide **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S) 472975-35-2, Calcium copper sulfide ((Ca,Cu)S) 705224-01-7, **Aluminum** calcium oxide sulfate (Al0.46Ca0.29O0.21(SO4)0.01) 705224-07-3, **Aluminum** calcium oxide (Al0.39Ca0.31O0.28) 705224-16-4, **Aluminum** calcium magnesium oxide sulfate (Al0.33Ca0.23Mg0.03O0.37(SO4)0.01) 705224-23-3, **Aluminum** calcium magnesium oxide (Al0.32Ca0.2Mg0.02O0.44) 705224-29-9, **Aluminum** calcium magnesium oxide sulfate (Al0.53Ca0.27Mg0.02O0.12(SO4)0.01) 705224-33-5, **Aluminum** calcium oxide sulfate (Al0.5Ca0.35O0.09(SO4)0.01) 705224-38-0, **Aluminum** calcium magnesium oxide sulfate (Al0.33Ca0.32Mg0.02O0.28(SO4)0.01) 705224-45-9, **Aluminum** calcium oxide sulfate (Al0.48Ca0.19O0.3(SO4)0.01) 705224-51-7, **Aluminum** calcium magnesium oxide sulfate (Al0.38Ca0.34Mg0.03O0.2(SO4)0.01) 705224-58-4, **Aluminum** calcium magnesium oxide sulfate (Al0.46Ca0.18Mg0.06O0.24(SO4)0.01) 705224-65-3, Calcium copper magnesium sulfide ((Ca,Cu,Mg)S)
(grain-boundary-pinning grains; steels with excellent HAZ toughness for crude oil tanks)

L37 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:141636 HCAPLUS
DOCUMENT NUMBER: 140:171982
TITLE: Inorganic **electroluminescent** device and method of fabricating the same
INVENTOR(S): Mikami, Akiyoshi
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 15 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004032203	A1	20040219	US 2003-635777	2003 0807
JP 2004071398	A2	20040304	JP 2002-230311	2002 0807
CN 1489423	A	20040414	CN 2003-153048	2003 0807
PRIORITY APPLN. INFO.:			JP 2002-230311 A	2002 0807

AB An inorg. **electroluminescent** device is described comprising an underlayer formed of a first compound semiconductor of Group IIa-VIb (e.g., MgS); and a **light** emitting layer (e.g., (Mg,Ca)S) formed of a second compound semiconductor of Group IIa-VIb, the first and the second compound semiconductor having the same crystalline structure. A method of fabricating the inorg. **electroluminescent** device is also described entailing forming an underlayer principally composed of a first compound semiconductor of Group IIa-VIb; and forming on the underlayer a

light emitting layer principally composed of a second compound semiconductor of Group IIa-VIb having the same crystalline structure as that of the first compound semiconductor and doped with a substance acting as a **luminescent** center.

IT **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
656222-29-6, Calcium magnesium sulfide (Ca0.1Mg0.9S)
(**light** emitting layer; inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)

RN 119537-26-7 HCAPLUS
CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

RN 656222-29-6 HCAPLUS
CN Calcium magnesium sulfide (Ca0.1Mg0.9S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.1	7440-70-2
Mg	0.9	7439-95-4

IT **12032-36-9**, Magnesium sulfide (MgS)
(underlayer; inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)

RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H01J001-62
ICS H01J063-04
INCL 313502000
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
ST **electroluminescent** device dual semiconductor layer fabrication
IT **Electroluminescent** devices
Semiconductor device fabrication
(inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)
IT 50926-11-9, Indium tin oxide
(cathode; inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)
IT 132085-96-2, Zirconium nitride silicide
(insulating layer; inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)
IT **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
656222-29-6, Calcium magnesium sulfide (Ca0.1Mg0.9S)
(**light** emitting layer; inorg.

electroluminescent device having two semiconductor layers having same crystalline structure)

IT 7440-53-1, Europium, uses
(**light** emitting layer; inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)

IT **12032-36-9**, Magnesium sulfide (MgS)
(underlayer; inorg. **electroluminescent** device having two semiconductor layers having same crystalline structure)

L37 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:376763 HCAPLUS
DOCUMENT NUMBER: 138:381687
TITLE: Resonance energy transfer assays based on **luminescent** inorganic doped nanoparticles
INVENTOR(S): Bohmann, Kerstin; Hoheisel, Werner; Koehler, Burkhard; Dorn, Ingmar
PATENT ASSIGNEE(S): Bayer Aktiengesellschaft, Germany
SOURCE: PCT Int. Appl., 55 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003040024	A2	20030515	WO 2002-EP12256	2002 1104
WO 2003040024	A3	20031023		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
DE 10153829	A1	20030528	DE 2001-10153829	2001 1105
CA 2465646	AA	20030515	CA 2002-2465646	2002 1104
EP 1444517	A2	20040811	EP 2002-787546	2002 1104
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
JP 2005508012	T2	20050324	JP 2003-542078	2002 1104

US 2005064604 A1 20050324 US 2004-494390 2004 0430

PRIORITY APPLN. INFO.: DE 2001-10153829 A 2001 1105

WO 2002-EP12256 W 2002 1104

AB The invention relates to an assay based on resonance energy transfer (RET), comprising a 1st mol. group A, which is marked with ≥1 energy donor, and ≥1 2nd mol. group B which is marked with ≥1 energy acceptor, the donor comprising a mol. or particle which can be energetically excited by an external radiation source and which is fluorescence enabled and the acceptor comprising a mol. or particle which can be excited by energy transfer via the donor with partial or complete quenching of the donor fluorescence, and the donor and/or acceptor comprise **luminescing** inorg. doped nanoparticles having an expansion of ≤ 50 nm, emitting electromagnetic radiation with stokes or anti-stokes scattering after energetic excitation. Thus LaPO4:Ce,Tb nanoparticles were synthesized; the nanoparticles were treated with ethylene glycol and sulfuric acid at 210 °C in inert gas atmospheric for 3 h. The particles were dissolved at ca. 135°C; ethylene glycol was partially evaporated and the solution was dialyzed over night against water. The surface treated nanoparticles underwent oxidation with potassium permanganate in the presence of sulfuric acid for carboxy functionalization.

IT **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
(Eu-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

RN 119537-26-7 HCAPLUS

CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IT **12032-36-9**, Magnesium sulfide
(doped with Eu, Cm, Sm or their combination; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM B82B

CC 9-5 (Biochemical Methods)
Section cross-reference(s): 3, 73

ST fluorescence resonance energy transfer **luminescent** inorg doped nanoparticle

IT Peptide nucleic acids

(affinity mols.; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Rare earth metals, uses
(dopants; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Radionuclides, uses
(gamma-emitters, γ-emitters; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Interleukin 2
(human recombinant, conjugate with bromotrimethyl silane-treated LaPO4:Eu; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Interleukin 2
(human recombinant; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT **Luminescent** substances
(**luminescent** inorg. doped nanoparticles (lid-nanoparticles); resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Antibodies and Immunoglobulins
(monoclonal, labeled, to β-hCG, labeled with LaPO4:Ce,Tb nanoparticles via undecanoic derivative spacer; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Antibodies and Immunoglobulins
(monoclonal, to β-hCG; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Rare earth metals, uses
(phosphates of, mixts. of lanthanide phosphates, doped with Ce and Tb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Carboxyl group
(product of ethylene glycol oxidation on LaPO4:Ce,Tb nanoparticle surface; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Bile
Blood analysis
Body fluid
Cerebrospinal fluid
Conducting polymers
Dopants
Doping
Feces
Fluorescence resonance energy transfer
Fluorometry
IR sources
Immunoassay
Microarray technology
Mycobacterium tuberculosis
Nanoparticles
PCR (polymerase chain reaction)
Particle size
Resonance energy transfer
Sputum
UV sources
Urine analysis
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Antibodies and Immunoglobulins

Enzymes, analysis
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT DNA
Proteins
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Antigens
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Antibodies and Immunoglobulins
(to hIL-2Rα chain, conjugated with Alexa fluor 680; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT Antibodies and Immunoglobulins
(to hIL-2Rα chain; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
(Bi-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 75529-26-9, Gadolinium magnesium borate (GdMgB5O10)
(Ce, Tb-codoped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 35361-71-8, Lithium strontium **hexafluoroaluminate** (LiSrAlF6) 35362-46-0, Calcium lithium **hexafluoroaluminate** (CaLiAlF6)
(Ce-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12024-21-4, Gallium oxide
(Dy-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 116551-27-0, Silicon oxide(SiOx)
(Er, Al-codoped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12031-63-9, Lithium niobium oxide (LiNbO3)
(Er-doped or Nd, Yb-codoped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 10377-51-2, Lithium iodide (LiI) 31387-71-0, Barium ytterbium fluoride (BaYb2F8) **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
(Eu-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7783-40-6, Magnesium fluoride
(Mn or lanthanide-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1306-23-6, Cadmium sulfide, uses 1343-88-0, Magnesium silicate 7779-90-0, Zinc phosphate (Zn3(PO4)2) 12007-60-2, Lithium borate (Li2B4O7) 12159-91-0, Germanium magnesium fluoride oxide (Ge2Mg8F2O11) 12255-72-0, Magnesium arsenate oxide (Mg6(AsO4)2O3) 126344-47-6, Magnesium zinc fluoride ((Mg,Zn)F2) 371759-78-3, Cadmium borate oxide (Cd(BO3)O) 403818-18-8, Beryllium zinc sulfate ((Be,Zn)(SO4))
(Mn-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13709-38-1, Lanthanum fluoride
(Nd, Ce-codoped or Yb, Er, Tm-codoped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 200212-20-0, Barium magnesium zinc oxide silicate ((Ba,Mg,Zn)3O(SiO3)2)

(Pb-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 26916-94-9, Lithium lutetium tetrafluoride (LiLuF4)
(Pr, Tm, Er, or Ce; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12031-43-5, Lanthanum oxide sulfide (La2O2S) 13875-40-6, Lanthanum bromide oxide (LaOBr)
(Tb-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13466-21-2, Barium phosphate (Ba2P2O7)
(Ti-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7789-17-5, Cesium iodide (CsI)
(Tl or Na-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7681-82-5, Sodium iodide (NaI), uses
(Tl-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 14118-26-4, Sodium lanthanum fluoride (NaLaF4) 14118-34-4, Sodium yttrium fluoride (NaYF4) 15640-94-5, Sodium gadolinium fluoride (NaGdF4) 26874-36-2, Barium yttrium fluoride (BaYF5)
(Yb, Er-codoped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 64987-85-5
(activation of LaPO4:Ce,Tb nanoparticles with undecanoic derivative spacer; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 371759-79-4, **Aluminum** calcium oxide silicate (Al2Ca2O(SiO3)2)
(ce-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 150927-51-8, **Aluminum** cerium magnesium terbium oxide (Al11Ce0.65MgTb0.35O19) 186956-28-5, **Aluminum** magnesium oxide (Al11MgO19)
(codoped with Ce and Tb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 371759-81-8, **Aluminum** yttrium borate oxide (Al3Y(BO3)3O3)
(codoped with Nd and Yb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 10101-39-0, Calcium silicate (CaSiO3)
(codoped with Pb and Mn or doped with a lanthanide; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 69142-81-0, Gadolinium strontium silicate (Gd2Sr3Si6O18)
(codoped with Pb and Mn; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12003-86-0, Yttrium **aluminate** (YAlO3)
(codoped with Pr, Tm, Er, and Ce; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 75535-31-8, Calcium chloride fluoride phosphate (Ca5(Cl,F)(PO4)3)
(codoped with Sb and Mn; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13573-11-0, Magnesium tungstate (MgWO4)
(codoped with Sm or Pb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13759-29-0, Yttrium oxychloride (YOCl)
(codoped with Yb and Er; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13566-12-6, Yttrium vanadate (YVO4)
(codoped with a lanthanide and In or doped with Eu, Sm or Dy; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7429-90-5, **Aluminum**, uses 7429-91-6, Dysprosium, uses 7439-92-1, Lead, uses 7439-96-5, Manganese, uses 7440-00-8, Neodymium, uses 7440-02-0, Nickel, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-30-4, Thulium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-39-3, Barium, uses 7440-45-1, Cerium, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses 7440-53-1, Europium, uses 7440-54-2, Gadolinium, uses 7440-55-3, Gallium, uses 7440-64-4, Ytterbium, uses 7440-70-2, Calcium, uses 13708-63-9, Terbium fluoride 13765-25-8, Europium fluoride
(dopant; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7790-75-2, Calcium tungstate (CaWO4)
(doped Pb or Sm; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13597-65-4, Zinc silicate (Zn2SiO4)
(doped with As and/or Mn; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 145564-56-3, Calcium magnesium silicate ((Ca,Mg)(SiO3))
(doped with Ce or Ti; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1314-96-1, Strontium sulfide
(doped with Ce, Sm, Eu, Cu, Ag or their combinations; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
(doped with Cu, Al, Ag, or Ni; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7631-86-9, Silicon oxide (SiO2), uses
(doped with Dy or Al; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13778-59-1, Lanthanum phosphate
(doped with Eu or Ce, codoped with Ce, Tb or Ce, Dy or Ce, Nd; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13718-55-3, Barium fluoride chloride (BaFCl)
(doped with Eu or Sm; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12027-88-2, Yttrium silicate (Y2SiO5)
(doped with Eu or another a lanthanide; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12340-04-4, Yttrium oxide sulfide (Y2O2S)
(doped with Eu or another lanthanide; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT **12032-36-9**, Magnesium sulfide
(doped with Eu, Cm, Sm or their combination; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1314-36-9, Yttrium oxide (Y2O3), uses
(doped with Eu, Tb, or another lanthanide; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1344-28-1, **Aluminum** oxide, uses 7446-28-8

12254-04-5, **Aluminum** barium magnesium oxide (Al10BaMgO17) 12267-71-9, Boron strontium oxide (B6SrO10) 13568-56-4, Lutetium vanadate (LuVO4) 13628-52-9, Gadolinium vanadate (GdVO4) 21669-04-5, Barium bromide fluoride (BaBrF) 55134-50-4, Barium magnesium **aluminate** (BaMg2Al16O27) 71012-47-0, **Aluminum** barium magnesium oxide (Al14BaMgO23) 76125-60-5, Strontium **aluminate** (Sr4Al14O25) 115968-61-1, Vanadium yttrium oxide phosphate (V0-1YO0-4(PO4)0-1) 124676-67-1, Gadolinium yttrium borate ((Gd,Y)(BO3)) 230313-54-9, Gallium yttrium borate ((Ga,Y)(BO3)) 350480-93-2, Magnesium strontium metaphosphate oxide ((Mg,Sr)2(PO3)2O) 371759-66-9, **Aluminum** barium magnesium oxide (Al2BaMgO3) 371759-80-7
(doped with Eu; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7789-24-4, Lithium fluoride, uses
(doped with Mg, Ti, Na or their combination; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7789-75-5, Calcium fluoride, uses
(doped with Mn or Dy; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 28042-61-7, Potassium magnesium fluoride (KMgF3)
(doped with Mn; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12143-49-6, Yttrium tantalate (YTaO4)
(doped with Nb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13968-67-7, Barium silicate (BaSi2O5)
(doped with Pb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 25617-97-4, Gallium nitride
(doped with Pr, Eu, Er, or Tm; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 33846-79-6, Barium yttrium fluoride (BaY2F8)
(doped with Pr, Tm, Er, or Ce; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 122656-71-7, Barium bromide chloride fluoride (BaBr0.5Cl0.5F)
(doped with Sm; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13812-81-2, Strontium phosphate (Sr2P2O7)
(doped with Sn or Eu; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 106804-21-1, Magnesium strontium phosphate ((Mg,Sr)3(PO4)2)
(doped with Sn; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1314-98-3, Zinc sulfide, uses
(doped with Tb, TbF3, EuF3, Mn, Ag, Eu, Cu, or another lanthanides; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12339-07-0, Gadolinium oxide sulfide (Gd2O2S) 371759-82-9, **Aluminum** gallium yttrium oxide (Al3Ga2Y2O12)
(doped with Tb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 13709-49-4, Yttrium fluoride
(doped with Yb and Er or a lanthanide; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1314-13-2, Zinc oxide, uses
(doped with Zn or with combination of Zn, Si, Ga; resonance

energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12592-70-0, Strontium gallium sulfide (SrGa2S4)
(doped with a lanthanide and/or Pb; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 20548-54-3, Calcium sulfide
(doped with a lanthanide or Bi; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7778-18-9, Calcium sulfate
(doped with a lanthanide or Mn; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12005-21-9, **Aluminum** yttrium oxide (Al5Y3O12)
39345-89-6, Yttrium lithium fluoride
(doped with a lanthanide; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 107-21-1, Ethylene glycol, reactions
(for surface treatment of LaPO4:Ce,Tb nanoparticles; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 1305-78-8, Calcium oxide, uses
(lanthanide-doped; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 20830-75-5, Digoxin
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 190598-57-3DP, conjugate with LaPO4:Ce,Tb nanoparticles via undecanoic derivative spacer 422309-67-9DP, Alexa fluor 680, conjugated with anti-hIL-2Rα chain antibody
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 12233-56-6, Bismuth germanium oxide (Bi4Ge3O12) 144419-68-1, **Aluminum** barium cerium magnesium oxide (Al11(Ba,Mg)CeO19)
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7440-06-4, Platinum, uses 50926-11-9, ITO
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 7300-34-7 190598-57-3 422309-67-9, Alexa fluor 680 524934-34-7 524983-29-7
(resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 2857-97-8, Bromotrimethyl silane
(silanization of LaPO4:Ce,Tb and LaPO4:Eu nanoparticles; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 524934-34-7DP, conjugate with bromotrimethyl silane-treated LaPO4:Ce,Tb nanoparticles, and binding to biotin, oligonucleotide or antibody
(spacer; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

IT 526360-24-7 526360-25-8
(unclaimed sequence; resonance energy transfer assays based on **luminescent** inorg. doped nanoparticles)

L37 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:185255 HCAPLUS
DOCUMENT NUMBER: 136:254311

TITLE: Doped nanoparticles
INVENTOR(S): Haubold, Stephan; Haase, Marcus; Riwotzky, Carsten; Weller, Horst; Meysamy, Heike; Ibarra, Fernando
PATENT ASSIGNEE(S): Nanosolutions G.m.b.H., Germany
SOURCE: PCT Int. Appl., 80 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002020695	A1	20020314	WO 2000-DE3130	2000 0908
W: BY, CN, IL, JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
DE 10111321	A1	20020523	DE 2001-10111321	2001 0308
CA 2388094	AA	20020314	CA 2001-2388094	2001 0907
WO 2002020696	A1	20020314	WO 2001-DE3433	2001 0907
W: AU, CA, CN, IL, JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
AU 2002010036	A5	20020322	AU 2002-10036	2001 0907
EP 1232226	A1	20020821	EP 2001-976022	2001 0907
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2004508215	T2	20040318	JP 2002-525704	2001 0907
US 2003032192	A1	20030213	US 2002-129530	2002 0626

PRIORITY APPLN. INFO.: WO 2000-DE3130 W 2000 0908
WO 2001-DE3433 W 2001 0907

AB Methods for producing fluorescent nanoparticles comprising doped hosts are described which entail carrying out the liquid-phase synthesis of the nanoparticles in an organic solvent. Synthesis in organic solvents allows substantially improved yields as compared to conventional synthesis in water. Owing to the narrower size

distribution of the nanoparticles produced, size separation is not required. Nanoparticles synthesized using the methods are also described, as are their use in marking articles and articles marked using them. Apparatus and methods are also described for detecting the presence of the nanoparticles using fluorescence emission from them.

IT **12032-36-9P**, Magnesium sulfide **119537-26-7P**, Calcium magnesium sulfide ((Ca,Mg)S)
(liquid-phase synthesis of fluorescent doped nanoparticles in organic solvents and the nanoparticles and marking and detection methods and apparatus using them)

RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

RN 119537-26-7 HCAPLUS
CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IC ICM C09K011-08
ICS G01N021-91; G01N021-76; G07D007-00; C09D011-00; A61B005-117

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 78

IT Alkali metal halides, uses
Aluminates
Arsenates
Borates
Halides
Molybdates
Nitrides
Oxides (inorganic), uses
Phosphates, uses
Selenides
Silicates, uses
Sulfates, uses
Sulfides, uses
(liquid-phase synthesis of fluorescent doped nanoparticles in organic solvents and the nanoparticles and marking and detection methods and apparatus using them)

IT 7429-90-5P, **Aluminum**, uses 7429-91-6P, Dysprosium, uses 7439-92-1P, Lead, uses 7439-95-4P, Magnesium, uses 7439-96-5P, Manganese, uses 7440-00-8P, Neodymium, uses 7440-02-0P, Nickel, uses 7440-03-1P, Niobium, uses 7440-10-0P, Praseodymium, uses 7440-19-9P, Samarium, uses 7440-21-3P, Silicon, uses 7440-22-4P, Silver, uses 7440-23-5P, Sodium, uses 7440-27-9P, Terbium, uses 7440-28-0P, Thallium, uses 7440-30-4P, Thulium, uses 7440-32-6P, Titanium, uses 7440-36-0P, Antimony, uses 7440-38-2P, Arsenic, uses 7440-45-1P, Cerium, uses 7440-47-3P, Chromium, uses 7440-48-4P, Cobalt, uses 7440-50-8P, Copper, uses 7440-52-0P,

Erbium, uses 7440-53-1P, Europium, uses 7440-55-3P, Gallium, uses 7440-64-4P, Ytterbium, uses 7440-66-6P, Zinc, uses 7440-69-9P, Bismuth, uses 7440-74-6P, Indium, uses 13708-63-9P, Terbium trifluoride 13765-25-8P, Europium trifluoride 16910-54-6P, Europium +2, uses
(liquid-phase synthesis of fluorescent doped nanoparticles in organic solvents and the nanoparticles and marking and detection methods and apparatus using them)

IT 1306-23-6P, Cadmium sulfide, uses 1314-13-2P, Zinc oxide, uses 1314-36-9P, Yttria, uses 1314-96-1P, Strontium sulfide 1314-98-3P, Zinc sulfide, uses 1344-28-1P, **Alumina**, uses 7631-86-9P, Silica, uses 7681-82-5P, Sodium iodide, uses 7758-87-4P, Calcium phosphate (Ca3(PO4)2) 7778-18-9P, Calcium sulfate (CaSO4) 7779-90-0P, Zinc phosphate 7783-40-6P, Magnesium fluoride 7789-17-5P, Cesium iodide 7789-24-4P, Lithium fluoride, uses 7789-75-5P, Calcium fluoride, uses 7790-75-2P, Calcium tungstate (CaWO4) 10101-39-0P, Calcium silicate (CaSiO3) 10377-51-2P, Lithium iodide 12003-86-0P, Yttrium **aluminate** (YAlO3) 12004-04-5P, Barium **aluminate** (BaAl2O4) 12005-21-9P, YAG 12007-60-2P, Lithium borate (Li2B4O7) 12024-21-4P, Gallium oxide 12024-36-1P, Gadolinium gallium oxide (Gd3Ga5O12) 12027-88-2P, Yttrium silicate (Y2SiO5) 12031-43-5P, Lanthanum oxide sulfide (La2O2S) 12031-63-9P, Lithium niobate **12032-36-9P**, Magnesium sulfide 12143-49-6P, Yttrium tantalate (YTaO4) 12159-91-0P, Germanium magnesium fluoride oxide (GeMg4FO5.5) 12233-56-6P, Bismuth germanate (Bi4Ge3O12) 12254-04-5P, Barium magnesium **aluminate** (BaMgAl10O17) 12255-72-0P, Magnesium arsenate oxide (Mg6(AsO4)2O3) 12339-07-0P, Gadolinium oxide sulfide (Gd2O2S) 12340-04-4P, Yttrium oxide sulfide (Y2O2S) 12442-27-2P, Cadmium zinc sulfide ((Cd,Zn)S) 12505-97-4P, Boron strontium fluoride oxide (B12Sr3F2O20) 12592-70-0P, Gallium strontium sulfide (Ga2SrS4) 13466-21-2P, Barium phosphate (Ba2P2O7) 13566-12-6P, Yttrium vanadate (YVO4) 13568-56-4P, Lutetium vanadate (LuVO4) 13573-11-0P, Magnesium tungstate (MgWO4) 13597-55-2P, Strontium silicate (Sr2SiO4) 13597-65-4P, Zinc silicate (Zn2SiO4) 13628-52-9P, Gadolinium vanadate (GdVO4) 13709-38-1P, Lanthanum fluoride 13709-49-4P, Yttrium trifluoride 13718-55-3P, Barium chloride fluoride (BaClF) 13759-29-0P, Yttrium oxychloride (YOCl) 13776-74-4P, Magnesium silicate (MgSiO3) 13778-59-1P, Lanthanum phosphate 13812-81-2P, Strontium phosphate (Sr2P2O7) 13813-76-8P, Yttrium **aluminum** borate (YAl3(BO3)4) 13875-40-6P, Lanthanum oxide bromide (LaOBr) 13968-67-7P, Barium silicate (BaSi2O5) 14118-26-4P, Sodium lanthanum fluoride (NaLaF4) 14118-34-4P, Sodium yttrium fluoride (NaYF4) 15640-94-5P, Sodium gadolinium fluoride (NaGdF4) 20548-54-3P, Calcium sulfide 20571-45-3P, Cadmium borate (CdB2O4) 21669-04-5P, Barium bromide fluoride (BaBrF) 23108-36-3P, Yttrium lithium fluoride (YliF4) 25617-97-4P, Gallium nitride 26874-36-2P, Barium yttrium fluoride (BaYF5) 26916-94-9P, Lithium lutetium fluoride (LiLuF4) 28042-61-7P, Potassium magnesium fluoride (KMgF3) 31387-71-0P, Barium ytterbium fluoride (BaYb2F8) 33846-79-6P, Barium yttrium fluoride (BaY2F8) 35361-71-8P, Lithium strontium **aluminum** fluoride (LiSrAlF6) 35362-46-0P, Lithium calcium **aluminum** fluoride (LiCaAlF6) 37276-56-5P, Calcium strontium chloride phosphate (CaSr9Cl2(PO4)6) 55134-50-4P, Barium magnesium **aluminate** (BaMg2Al16O27) 69142-81-0P 71012-47-0P, Barium magnesium **aluminate** (BaMgAl14O23) 75535-31-8P, Calcium chloride fluoride phosphate

(Ca5(Cl,F)(PO4)3) 76125-60-5P, Strontium **aluminate** (Sr4Al14O25) 82992-94-7P, Calcium strontium sulfide (Ca0-1Sr0-1S) 104663-37-8P, Gadolinium magnesium borate (GdMgB5O10) 106804-21-1P, Strontium magnesium phosphate (Sr0-3Mg0-3(PO4)2) 115968-61-1P, Vanadium yttrium oxide phosphate (V0-1Y0-4(PO4)0-1) **119537-26-7P**, Calcium magnesium sulfide ((Ca,Mg)S) 122656-71-7P, Barium bromide chloride fluoride (BaBr0.5Cl0.5F) 124676-67-1P, Yttrium gadolinium borate (Y0-1Gd0-1BO3) 126344-47-6P, Magnesium zinc fluoride (Mg0-1Zn0-1F2) 144419-68-1P, **Aluminum** barium cerium magnesium oxide (Al11(Ba,Mg)CeO19) 145564-56-3P, Calcium magnesium silicate (Ca0-1Mg0-1SiO3) 150927-51-8P, **Aluminum** cerium magnesium terbium oxide (Al11Ce0.65MgTb0.35O19) 176635-80-6P, Magnesium strontium (diphosphate) ((Mg,Sr)2(P2O7)) 186956-28-5P, **Aluminum** magnesium oxide (Al11MgO19) 225796-98-5P, **Aluminum** barium magnesium oxide (Al2(Ba,Mg)O4) 230313-54-9P, Yttrium gallium borate (Y0-1Ga0-1BO3) 371759-79-4P, **Aluminum** calcium oxide silicate (Al2Ca2O(SiO3)2) 371759-82-9P, **Aluminum** gallium yttrium oxide (Al3Ga2Y2O12) 403818-15-5P, Barium magnesium zinc silicate ((Ba,Mg,Zn)3(Si2O7)) 403818-18-8P, Beryllium zinc sulfate ((Be,Zn)(SO4)) 403818-21-3P, Barium calcium strontium phosphate ((Ba,Ca,Sr)3(PO4)2) 403818-24-6P, Europium gadolinium vanadium oxide (Eu0.05Gd0.95VO4) 403818-25-7P, Europium tungsten yttrium oxide (Eu0.2W3Y1.8O12) 403818-27-9P, Gadolinium tantalum terbium oxide (Gd0.95TaTb0.05O4)
(liquid-phase synthesis of fluorescent doped nanoparticles in organic solvents and the nanoparticles and marking and detection methods and apparatus using them)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L37 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:814004 HCAPLUS
DOCUMENT NUMBER: 135:341136
TITLE: Preparation of **luminescent**-doped inorganic nanoparticles and usage as labels for biomolecule probes
INVENTOR(S): Hoheisel, Werner; Petry, Christoph; Bohmann, Kerstin; Haase, Markus; Riwotzki, Karsten
PATENT ASSIGNEE(S): Bayer A.-G., Germany
SOURCE: Ger. Offen., 12 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 10106643	A1	20011108	DE 2001-10106643	2001 0212
CA 2407899	AA	20011115	CA 2001-2407899	2001 0423
WO 2001086299	A2	20011115	WO 2001-EP4545	

2001
0423

WO 2001086299 A3 20020523
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB,
GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN,
MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK,
SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW,
AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE,
CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR,
NE, SN, TD, TG
EP 1282824 A2 20030212 EP 2001-931636
2001
0423
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE,
MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR
JP 2003532898 T2 20031105 JP 2001-583192
2001
0423

US 2004014060 A1 20040122 US 2003-275355
2003
0414

PRIORITY APPLN. INFO.: DE 2000-10021674 A1
2000
0505

DE 2001-10106643 A
2001
0212

WO 2001-EP4545 W
2001
0423

AB The invention concerns **luminescent**-doped inorg. nanoparticles that are used as labels for affinity mols. e.g. nucleic acids, antibodies, proteins, etc.; affinity mols. are directly attached to the nanoparticles or via linker groups, e.g. thiols, amines, imidazoles, mol. self-assemblies, etc. Thus europium-doped phosphoric acid, lanthanum(3+) salt (1:1) was prepared by a previously described wet chemical method; the obtained milky dispersion was centrifuged, dialyzed and dried to obtain the desired particle size. The LaPO4:Eu nanoparticles were coated with silica using a basic sodium water glass solution; separated by ethanol precipitation, centrifugation, ultrasound dispersion, decanting and drying. The silica coated nanoparticles were amine-activated with 3-aminopropyltriethoxysilane and treated with sulfosuccinimidyl 4-(N-maleimidomethyl)cyclohexane-1-carboxylate (sulfo-SMCC) crosslinker. Antibodies to α-actin were thiol-activated in a 2-iminothiolane solution and incubated with the treated **luminescent**-doped inorg. nanoparticles; the obtained **luminescent** probes were used to visualize actin filaments in rabbit muscles by confocal laser scanning microscopy.

IT **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
(Eu-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

RN 119537-26-7 HCAPLUS

CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IT **12032-36-9**, Magnesium sulfide (MgS)
(doped with Eu, Ce, Sm or combination; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM G01N033-52
ICS G01N033-58; C12Q001-00; C12Q001-68
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 73
ST **luminescent** doped inorg nanoparticle biomol probe fluorescence microscopy
IT Ketones, uses
(1,2-diketones; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT **Luminescence**
(UV; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Surfactants
(anionic; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Heterocyclic compounds
(azolides; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Surfactants
(cationic; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Rare earth metals, uses
(dopant; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Phosphates, uses
(doped with Ce,Tb,of a lanthanide or their mixture; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Imidic acids
(esters; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Group IIIA element compounds
(gallates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT **Radioluminescence**
(gamma-ray; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Group IVA element compounds
(germanates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Phosphates, uses
(halide; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Immunoassay
(**luminescence**; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Group VB element compounds
(niobates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Heterocyclic compounds
(nitrogen, five-membered, imidazoles; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Sulfides, uses
(oxy; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Halides
(phosphates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Amines, reactions
(polyamines, nonpolymeric; preparation of **luminescent** -doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Carboxylic acids, reactions
(polycarboxylic; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Animal tissue
Biochemical molecules
Blood analysis
Blood plasma
Blood serum
Cathodoluminescence
Cerebrospinal fluid
Dopants
Fluorescence microscopy
Fluorescent substances
Fluorometry
Immobilization, biochemical
Light sources
Luminescence spectroscopy
Luminescent substances
Nanoparticles
Nucleic acid hybridization
Particle size
Plant tissue
Plasmids
Self-assembly
Sputum
Sulfhydryl group
Urine analysis
X-ray **luminescence**
(preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT Alkali metal halides, uses
Anhydrides
Arsenates
Aryl halides
Borates
Haptens
Isothiocyanates

Molybdates
Oxides (inorganic), uses
Peptides, uses
Phosphates, uses
Polysaccharides, uses
Selenides
Silicates, uses
Sulfates, uses
Sulfides, uses
Sulfonyl halides
(preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Antibodies
Nucleic acids
Probes (nucleic acid)
Proteins, general, uses
Thiols (organic), uses
(preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Amines, reactions
Polysulfones, reactions
Thioethers
(preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Diazonium compounds
(salts; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Selenides
(sulfo; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Group VB element compounds
(tantalates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Antibodies
(to α-actin; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Group VIB element compounds
(tungstates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Carbonyl compounds (organic), uses
(unsatd.; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Group VB element compounds
(vanadates; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Surfactants
(zwitterionic; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT Actins
(α-; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 1314-98-3, Zinc sulfide (ZnS), uses
(Ag, Al, Cu, Mn, Tb, TbF3, Eu, EuF3, lanthanide doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S)
(Bi-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 145564-56-3, Calcium magnesium silicate ((Ca,Mg)(SiO3))
(Ce or Ti doped; preparation of **luminescent**-doped inorg.

nanoparticles and usage as labels for biomol. probes)

IT 150927-51-8, **Aluminum** cerium magnesium terbium oxide (Al11Ce0.65MgTb0.35O19) 186956-28-5, **Aluminum** magnesium oxide (Al11MgO19)
(Ce, Tb doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 35361-71-8, **Aluminum** lithium strontium fluoride (AlLiSrF6) 35362-46-0 371759-79-4, **Aluminum** calcium oxide silicate (Al2Ca2O(SiO3)2)
(Ce-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
(Cu, Al, Ag, Ni doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 12024-21-4, Gallium oxide (Ga2O3)
(Dy-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 21669-04-5, Barium bromide fluoride (BaBrF) 122656-71-7, Barium bromide chloride fluoride (BaBr0.5Cl0.5F)
(Eu doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 13718-55-3, Barium chloride fluoride (BaClF)
(Eu or Sm doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 1344-28-1, **Alumina**, uses 10377-51-2, Lithium iodide (LiI) 12254-04-5, **Aluminum** barium magnesium oxide (Al10BaMgO17) 12505-97-4, Boron strontium fluoride oxide (B12Sr3F2O20) 37276-56-5, Calcium strontium chloride phosphate (CaSr9Cl2(PO4)6) 55134-50-4, **Aluminum** barium magnesium oxide (Al16BaMg2O27) 71012-47-0, **Aluminum** barium magnesium oxide (Al14BaMgO23) 115968-61-1, Vanadium yttrium oxide phosphate (V0-1YO0-4(PO4)0-1) **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S) 350480-93-2, Magnesium strontium metaphosphate oxide ((Mg,Sr)2(PO3)2O) 371759-66-9, **Aluminum** barium magnesium oxide (Al2BaMgO3) 371759-80-7
(Eu-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 13597-65-4, Zinc silicate (Zn2SiO4)
(Mn or As-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 7789-75-5, Calcium fluoride (CaF2), uses
(Mn or Dy doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 7778-18-9, Calcium sulfate (CaSO4)
(Mn or lanthanide doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 10101-39-0
(Mn, Pb, lanthanide doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 7779-90-0, Zinc phosphate (Zn3(PO4)2) 12007-60-2, Lithium borate (Li2B4O7) 12159-91-0, Germanium magnesium fluoride oxide (Ge2Mg8F2O11) 12255-72-0, Magnesium arsenate oxide (Mg6(AsO4)2O3) 13776-74-4, Magnesium metasilicate (MgSiO3) 28042-61-7, Magnesium potassium fluoride (MgKF3) 126344-47-6, Magnesium zinc fluoride ((Mg,Zn)F2) 371759-74-9, Beryllium zinc oxide sulfide (BeZn4O4S) 371759-78-3, Cadmium borate oxide (Cd(BO3)O)
(Mn-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 1306-23-6, Cadmium sulfide, uses
(Mn-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 12143-49-6, Tantalum yttrium oxide (TaYO4)
(Nb-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 7790-75-2, Calcium tungstate (CaWO4)
(Pb or Sm doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13573-11-0, Magnesium tungstate (MgWO4)
(Pb or Sm-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13968-67-7, Barium silicate (BaSi2O5) 200212-20-0, Barium magnesium zinc oxide silicate ((Ba,Mg,Zn)3O(SiO3)2)
(Pb-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 33846-79-6, Barium yttrium fluoride (BaY2F8)
(Pr, Tm, Er, Ce doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 75535-31-8, Calcium chloride fluoride phosphate (Ca5(Cl,F)(PO4)3)
(Sb, Mn doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 106804-21-1, Magnesium strontium phosphate ((Mg,Sr)3(PO4)2)
(Sn-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 12031-43-5, Lanthanum oxide sulfide (La2O2S) 13875-40-6, Lanthanum bromide oxide (LaBrO)
(Tb doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13466-21-2, Barium pyrophosphate (Ba2P2O7)
(Ti-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 7789-17-5, Cesium iodide (CsI)
(Tl-doped or sodium-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 7681-82-5, Sodium iodide (NaI), uses
(Tl-doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 1314-13-2, Zinc oxide (ZnO), uses
(Zn,Si,Ga doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 7429-90-5, **Aluminum**, uses 7429-91-6, Dysprosium, uses 7439-92-1, Lead, uses 7439-96-5, Manganese, uses 7440-00-8, Neodymium, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-10-0, Praseodymium, uses 7440-19-9, Samarium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-28-0, Thallium, uses 7440-30-4, Thulium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses 7440-38-2, Arsenic, uses 7440-45-1, Cerium, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-52-0, Erbium, uses 7440-53-1, Europium, uses 7440-55-3, Gallium, uses 7440-64-4, Ytterbium, uses 7440-66-6, Zinc, uses 7440-69-9, Bismuth, uses 7440-74-6, Indium, uses
(dopant; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 76125-60-5, **Aluminum** strontium oxide (Al14Sr4O25)
(doped Eu; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 75529-26-9, Gadolinium magnesium borate (GdMgB5O10)

(doped with Ce, Tb; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 7631-86-9, Silicon dioxide, uses
(doped with Dy, Al; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 113671-38-8, Silicon oxide (SiO0-2)
(doped with Er, Al; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 31387-71-0, Barium ytterbium fluoride (BaYb2F8)
(doped with Er; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 12027-88-2, Yttrium silicate (Y2SiO5) 12340-04-4, Yttrium oxide sulfide (Y2O2S)
(doped with Eu or other lanthanide; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT **12032-36-9**, Magnesium sulfide (MgS)
(doped with Eu, Ce, Sm or combination; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 13778-59-1, Lanthanum phosphate (LaPO4)
(doped with Eu, Ce, Tb, Dy, Nd; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 13566-12-6, Vanadium yttrium oxide (VYO4)
(doped with Eu, Sm, Dy, In; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 1314-36-9, Yttrium oxide (Y2O3), uses
(doped with Eu, Tb or other lanthanide; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 13568-56-4, Lutetium vanadium oxide (LuVO4) 13628-52-9, Gadolinium vanadium oxide (GdVO4) 124676-67-1, Gadolinium yttrium borate ((Gd,Y)(BO3)) 230313-54-9, Gallium yttrium borate ((Ga,Y)(BO3))
(doped with Eu; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 7789-24-4, Lithium fluoride (LiF), uses
(doped with Mg, Ti, Na or their combination; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 7783-40-6, Magnesium fluoride (MgF2)
(doped with Mn or lanthanide; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 13709-38-1, Lanthanum fluoride (LaF3)
(doped with Nd, Ce, Yb, Er, Tm; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 12031-63-9, Lithium niobate (LiNbO3)
(doped with Nd, Yb, Er; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 371759-81-8, **Aluminum** yttrium borate oxide (Al3Y(BO3)3O3)
(doped with Nd, Yb; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 69142-81-0, Gadolinium strontium silicate (Gd2Sr3Si6O18)
(doped with Pb,Mn; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

IT 25617-97-4, Gallium nitride (GaN)
(doped with Pr, Eu, Er, Tm; preparation of **luminescent** -doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 12003-86-0, **Aluminum** yttrium oxide (AlYO3) 26916-94-9, Lithium lutetium fluoride (LiLuF4)
(doped with Pr, Tm, Er, Ce; preparation of **luminescent** -doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 1314-96-1, Strontium sulfide (SrS)
(doped with Sm, Ce, Eu, Ag, Cu; preparation of **luminescent** -doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13812-81-2, Strontium pyrophosphate (Sr2P2O7)
(doped with Sn or Eu; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 371759-82-9, **Aluminum** gallium yttrium oxide (Al3Ga2Y2O12)
(doped with Tb; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13759-29-0, Yttrium chloride oxide (YClO) 14118-26-4, Lanthanum sodium fluoride (LaNaF4) 14118-34-4, Sodium yttrium fluoride (NaYF4) 15640-94-5, Gadolinium sodium fluoride (GdNaF4) 26874-36-2, Barium yttrium fluoride (BaYF5)
(doped with Yb, Er; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13709-49-4, Yttrium fluoride (YF3)
(doped with Yb,Er, lanthanide; preparation of **luminescent** -doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 12592-70-0, Gallium strontium sulfide (Ga2SrS4)
(doped with lanthanide, Pb; preparation of **luminescent** -doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 12005-21-9, **Aluminum** yttrium oxide (Al5Y3O12) 23108-36-3, Lithium yttrium fluoride (LiYF4)
(doped with lanthanide; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 1305-78-8, Calcium oxide, uses
(doped with lanthanides; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 12339-07-0, Gadolinium oxide sulfide (Gd2O2S)
(doped with tb; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 20548-54-3, Calcium sulfide (CaS)
(lanthanide or Bi doped; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 58-85-5, Biotin 503-68-4D, Diazoacetic acid, derivative 541-59-3D, Maleimide, derivative 661-20-1D, Isocyanate, derivative 7439-97-6D, Mercury, organic derivative, uses 11098-82-1, **Aluminate** 12233-56-6, Bismuth germanate (Bi4Ge3O12) 20830-75-5, Digoxin 144419-68-1, **Aluminum** barium cerium magnesium oxide (Al11(Ba,Mg)CeO19)
(preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 113-00-8, Guanidine 120-72-9D, Indole, derivs. 1344-09-8, Water glass 6539-14-6, 2-Iminothiolane 64987-85-5
(preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 13708-63-9, Terbium fluoride (TbF3) 13765-25-8, Europium

fluoride (EuF3)
(with ZnS; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)
IT 7440-27-9, Terbium, uses
(with mixed oxides; preparation of **luminescent**-doped inorg. nanoparticles and usage as labels for biomol. probes)

L37 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:450736 HCAPLUS
DOCUMENT NUMBER: 129:101726
TITLE: Infrared-excited long-afterglow phosphore with blue emission
INVENTOR(S): Kato, Tomoharu; Okata, Akira; Ishiwatari, Shoji
PATENT ASSIGNEE(S): Mitsubishi Materials Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10183114	A2	19980714	JP 1996-343285	1996 1224
PRIORITY APPLN. INFO.:			JP 1996-343285	1996 1224

AB The phosphor comprises an alkaline earth sulfide containing 10-5-10-3 mol Bi and 10-5-10-3 mol Sn (per 1 mol of the sulfide) as activators. The phosphor comprises a sulfide of Ca, Sr and/or Mg containing the activators. The phosphor is useful for IR detectors. The phosphor emits blue **light** with high visibility in **light** conditions.
IT **12032-36-9**, Magnesium sulfide (MgS) **209727-23-1**, Calcium magnesium sulfide (Ca0.3Mg0.7S) **209727-24-2**, Calcium magnesium sulfide (Ca0.7Mg0.3S)
(alkaline earth sulfide containing Bi and Sn as IR-excited long-afterglow phosphore with blue emission)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

RN 209727-23-1 HCAPLUS
CN Calcium magnesium sulfide (Ca0.3Mg0.7S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.3	7440-70-2
Mg	0.7	7439-95-4

RN 209727-24-2 HCAPLUS
CN Calcium magnesium sulfide (Ca0.7Mg0.3S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.7	7440-70-2
Mg	0.3	7439-95-4

IC ICM C09K011-55
ICS C09K011-56; G01J001-58
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT 1314-96-1, Strontium sulfide (SrS) **12032-36-9**, Magnesium sulfide (MgS) 20548-54-3, Calcium sulfide (CaS) 113939-20-1, Calcium strontium sulfide (Ca0.7Sr0.3S) 113939-23-4, Calcium strontium sulfide (Ca0.3Sr0.7S) 198208-83-2, Magnesium strontium sulfide (Mg0.7Sr0.3S) 198208-84-3, Magnesium strontium sulfide (Mg0.5Sr0.5S) 198208-85-4, Magnesium strontium sulfide (Mg0.3Sr0.7S) **209727-23-1**, Calcium magnesium sulfide (Ca0.3Mg0.7S) **209727-24-2**, Calcium magnesium sulfide (Ca0.7Mg0.3S)
(alkaline earth sulfide containing Bi and Sn as IR-excited long-afterglow phosphore with blue emission)

L37 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1993:591056 HCAPLUS
DOCUMENT NUMBER: 119:191056
TITLE: Synthesis and **cathodoluminescence** of orange-yellow- to red-emitting manganese-doped calcium magnesium sulfide (Ca1-xMgxS) phosphors
AUTHOR(S): Collins, Brian T.; Ling, Mildred
CORPORATE SOURCE: Tubes Display Group, Thomson Consumer Electron., Lancaster, PA, 17601, USA
SOURCE: Journal of the Electrochemical Society (1993), 140(6), 1752-5
CODEN: JESOAN; ISSN: 0013-4651
DOCUMENT TYPE: Journal
LANGUAGE: English
AB A complete series of single-phase Ca1-xMgxS:Mn phosphors were synthesized by firing in an H2S/PCl3 atmosphere at 1200°C. The **cathodoluminescence** of these compds. was investigated at room temperature The emission color varied from orange-yellow to deep red as the concentration of magnesium was increased. For composition Ca0.75Mg0.25S:Mn (0.1 a/o) a highly saturated red emission was obtained with chromaticity coordinates of x = 0.657, γ = 0.341, which are comparable to the com. red phosphor Y2O2S:Eu (x = 0.650, γ = 0.342). The quantum efficiencies of the end members of the Ca1-x Mgx:Mn series were the highest. As substitution was increased, the quantum efficiency rapidly decreased with the lowest values in the 0.25 $\leq$ x $\leq$ 0.50 range. In addition, the presence of chloride, with or without phosphide, had a deleterious effect on the emission intensity; however, the chromaticity remained unchanged. Factors influencing the manganese emission are discussed.
IT **12032-36-9**, Magnesium sulfide **150402-51-0**, Calcium magnesium sulfide (Ca0.9Mg0.1S) **150402-52-1**,

Calcium magnesium sulfide (Ca0.75Mg0.25S) **150402-53-2**,
Calcium magnesium sulfide (Ca0.5Mg0.5S) **150402-54-3**,
Calcium magnesium sulfide (Ca0.4Mg0.6S)
(**cathodoluminescence** of manganese-containing)

RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

RN 150402-51-0 HCAPLUS
CN Calcium magnesium sulfide (Ca0.9Mg0.1S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.9	7440-70-2
Mg	0.1	7439-95-4

RN 150402-52-1 HCAPLUS
CN Calcium magnesium sulfide (Ca0.75Mg0.25S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.75	7440-70-2
Mg	0.25	7439-95-4

RN 150402-53-2 HCAPLUS
CN Calcium magnesium sulfide (Ca0.5Mg0.5S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.5	7440-70-2
Mg	0.5	7439-95-4

RN 150402-54-3 HCAPLUS
CN Calcium magnesium sulfide (Ca0.4Mg0.6S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.4	7440-70-2
Mg	0.6	7439-95-4

IT **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
(**cathodoluminescence** phosphorous from
manganese-containing)
RN 119537-26-7 HCAPLUS
CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **cathodoluminescence** phosphor manganese calcium magnesium sulfide
IT **Luminescence**, cathodo-
(of manganese-doped calcium magnesium sulfide)
IT **12032-36-9**, Magnesium sulfide 20548-54-3, Calcium sulfide **150402-51-0**, Calcium magnesium sulfide (Ca0.9Mg0.1S) **150402-52-1**, Calcium magnesium sulfide (Ca0.75Mg0.25S) **150402-53-2**, Calcium magnesium sulfide (Ca0.5Mg0.5S) **150402-54-3**, Calcium magnesium sulfide (Ca0.4Mg0.6S)
(**cathodoluminescence** of manganese-containing)
IT **119537-26-7**, Calcium magnesium sulfide ((Ca,Mg)S)
(**cathodoluminescence** phosphorous from manganese-containing)
IT 7439-96-5, Manganese, properties
(**cathodoluminescence** phosphorus from calcium magnesium sulfide with)

L37 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1992:30990 HCAPLUS
DOCUMENT NUMBER: 116:30990
TITLE: **Light**-emitting thin films and thin-film **electroluminescent** device
INVENTOR(S): Okajima, Michio; Tohda, Takao
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 446746	A2	19910918	EP 1991-103189	19910304
EP 446746	A3	19920304		
EP 446746	B1	19960313		
R: DE, FR, GB				
JP 03266393	A2	19911127	JP 1990-63152	19900314
JP 03280395	A2	19911211	JP 1990-79449	19900328
JP 04160793	A2	19920604	JP 1990-285640	19901022
JP 05013172	A2	19930122	JP 1991-226988	19910906

US 5700591	A	19971223	US 1994-216853		1994 0323
PRIORITY APPLN. INFO.:			JP 1990-63152	A	1990 0314
			JP 1990-79449	A	1990 0328
			JP 1990-265654	A	1990 1002
			JP 1990-285640	A	1990 1022
			US 1991-665799	B1	1991 0308

AB Multilayered **light**-emitting films are described which comprise a phosphor film (e.g., ≥1 chalcogenides of Zn, Cd, Mn, or alkaline earth metals) 1-50 nm thick sandwiched between barrier layers of materials (e.g., alkaline earth fluorides) having larger energy gaps than the phosphor; films comprising stacks of these structures are also described. **Electroluminescent** devices employing the films are claimed.

IT **121834-31-9**, Calcium magnesium sulfide (Ca0.6Mg0.4S) (**electroluminescent** multilayer films with barrier layers from)

RN 121834-31-9 HCAPLUS

CN Calcium magnesium sulfide (Ca0.6Mg0.4S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.6	7440-70-2
Mg	0.4	7439-95-4

IT **12032-36-9**, Magnesium sulfide (**electroluminescent** multilayer films with phosphor films from)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg═S

IC ICM H05B033-14

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST alk earth chalcogenide **electroluminescent** film; cadmium chalcogenide **electroluminescent** film; manganese chalcogenide **electroluminescent** film; zinc chalcogenide

electroluminescent film; **electroluminescent** device chalcogenide film
IT Alkaline earth fluorides
(**electroluminescent** films with barrier layers from)
IT Alkaline earth chalcogenides
(**electroluminescent** multilayer films with phosphor films from)
IT **Electroluminescent** devices
(multilayer emission structures for)
IT Alkaline earth chalcogenides
(sulfides, **electroluminescent** multilayer films with phosphor films from)
IT 7789-75-5, Calcium fluoride (CaF2), uses
(**electroluminescent** devices containing, with chalcogenide emitting films)
IT 7440-22-4, Silver, uses
(**electroluminescent** films with emitting layers from cadmium zinc sulfide activated with)
IT 12442-27-2, Cadmium zinc sulfide ((Cd,Zn)S)
(**electroluminescent** films with emitting layers from silver-activated)
IT 106495-63-0, Cadmium manganese telluride ((Cd,Mn)Te)
121834-31-9, Calcium magnesium sulfide (Ca0.6Mg0.4S)
138187-03-8, Manganese zinc selenide sulfide ((Mn,Zn)(Se,S))
(**electroluminescent** multilayer films with barrier layers from)
IT 1314-98-3, Zinc sulfide, uses 1315-09-9, Zinc selenide (ZnSe)
1315-11-3, Zinc telluride
(**electroluminescent** multilayer films with phosphor films from)
IT **12032-36-9**, Magnesium sulfide 12032-88-1, Manganese telluride (MnTe) 18820-29-6, Manganese sulfide 37320-90-4, Manganese selenide
(**electroluminescent** multilayer films with phosphor films from)

L37 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1989:124946 HCAPLUS
DOCUMENT NUMBER: 110:124946
TITLE: Microencapsulated alkaline earth sulfide phosphors
INVENTOR(S): Yokoyama, Taiichi; Shibata, Katsuya
PATENT ASSIGNEE(S): Tosoh Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63178194	A2	19880722	JP 1987-8192	19870119

PRIORITY APPLN. INFO.: JP 1987-8192 19870119

AB The title phosphors are successively coated with Et cellulose and a nonionic surfactant. CaMgS:Mn was encapsulated with Et cellulose and Noigen ET100E (nonionic surfactant) to show **luminance** retention 95% against hydrolysis.

IT **119537-26-7**, Calcium magnesium sulfide
(phosphors from manganese-activated, microencapsulation of, for hydrolysis resistance)

RN 119537-26-7 HCAPLUS

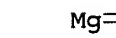
CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IT **12032-36-9**, Magnesium sulfide
(phosphors from, microencapsulation of, for hydrolysis resistance)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM C09K011-08
ICS H01J029-20

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)

IT **119537-26-7**, Calcium magnesium sulfide
(phosphors from manganese-activated, microencapsulation of, for hydrolysis resistance)

IT 1314-96-1, Strontium sulfide **12032-36-9**, Magnesium sulfide
(phosphors from, microencapsulation of, for hydrolysis resistance)

=> d l38 1-29 ibib abs hitstr hitind

L38 ANSWER 1 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:429175 HCAPLUS
DOCUMENT NUMBER: 142:438465
TITLE: Electroluminescent device
INVENTOR(S): Yamashita, Seiji
PATENT ASSIGNEE(S): Fuji Photo Film Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005104509	A1	20050519	US 2004-990370	2004

PRIORITY APPLN. INFO.: JP 2003-389546 A 1118 2003 1119

AB To provide an electroluminescent device capable of emitting light with sufficiently high luminance even when applied to a large-area display of 0.25 m2 or more, ensuring good driving efficiency and causing less reduction of luminance due to heat generation, the electroluminescent device contains: a transparent conductive film; a light-emitting **layer** containing a phosphor particle and a binder; and a back electrode, wherein the transparent conductive film has a surface resistivity of 0.05 to 50 Ω/.box., the light-emitting **layer** has an average thickness of 1 to 25 μm, and the back electrode comprises a metal.

IT **12032-36-9**, Magnesium sulfide
(**electroluminescent** device)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg═S

IC ICM H01J001-62

INCL 313503000

CC 73-12 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

IT 1303-00-0, Gallium arsenide, properties 1306-23-6, Cadmium sulfide, properties 1306-24-7, Cadmium selenide, properties 1306-25-8, Cadmium telluride, properties 1314-96-1, Strontium sulfide 1314-98-3, Zinc sulfide, properties 1315-09-9, Zinc selenide 1315-11-3, Zinc telluride 7429-90-5, Aluminum, properties 7439-89-6, Iron, properties 7440-06-4, Platinum, properties 7440-22-4, Silver, properties 7440-50-8, Copper, properties 7440-57-5, Gold, properties **12032-36-9**, Magnesium sulfide 12063-98-8, Gallium phosphide, properties 20548-54-3, Calcium sulfide
(**electroluminescent** device)

L38 ANSWER 2 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2005:181998 HCAPLUS

DOCUMENT NUMBER: 142:228508

TITLE: Inorganic thin **layer**, organic electroluminescence device including the same, and fabrication method thereof

INVENTOR(S): Ju, Byeong-Kwon; Kim, Jai-Kyeong; Kim, Young-Chul; Kim, Hoon; Kim, Kwang-Ho; Lee, Joo-Won

PATENT ASSIGNEE(S): S. Korea

SOURCE: U.S. Pat. Appl. Publ., 15 pp.
CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

US 2005046339	A1	20050303	US 2004-922931	2004 0823
PRIORITY APPLN. INFO.:			KR 2003-59905	A 2003 0828

AB The present invention discloses an inorg. thin **layer** which is composed of an inorg. composite containing at least two kinds of inorg. materials and shows excellent moisture and oxygen proof, an organic electroluminescence device including the inorg. thin **layer** as a passivation **layer**, and a fabrication method thereof.

IC ICM H05B033-00

INCL 313504000

CC 73-12 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST inorg thin **layer** org electroluminescence device manuf

IT Electroluminescent devices
(displays; inorg. thin **layer**, organic electroluminescence device including the same, and fabrication method thereof)

IT Luminescent screens
(**electroluminescent**; **inorg.** thin **layer**, organic electroluminescence **device** including the same, and fabrication method thereof)

IT Composites
Electroluminescent devices
Films
Passivation
Ultrathin films
Water-resistant materials
(inorg. thin **layer**, organic electroluminescence device including the same, and fabrication method thereof)

IT Nitrides
Oxides (inorganic), properties
(inorg. thin **layer**, organic electroluminescence device including the same, and fabrication method thereof)

IT 1305-78-8, **Calcia**, properties 1309-48-4, **Magnesia**, properties 1313-59-3, Sodium oxide, properties 1314-23-4, Zirconia, properties 1314-61-0, Tantala 1344-28-1, Alumina, properties 7631-86-9, Silica, properties 7783-40-6, **Magnesium** difluoride 12033-89-5, Silicon nitride, properties 13463-67-7, Titania, properties
(inorg. thin **layer**, organic electroluminescence device including the same, and fabrication method thereof)

L38 ANSWER 3 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER:	2004:836528 HCAPLUS
DOCUMENT NUMBER:	141:340075
TITLE:	Quantum dot white and colored light-emitting devices
INVENTOR(S):	Miller, Jeffrey N.; Moon, Ronald L.; Bawendi, Moungi E.; Heine, Jason; Jensen, Klavs F.
PATENT ASSIGNEE(S):	Massachusetts Institute of Technology, USA
SOURCE:	U.S., 14 pp., Cont.-in-part of U.S. 6,501,091. CODEN: USXXAM
DOCUMENT TYPE:	Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6803719	B1	20041012	US 1999-350956	19990709
US 6501091	B1	20021231	US 1998-167795	19981007
US 2003127659	A1	20030710	US 2002-329596	20021226
US 6890777	B2	20050510		
US 2003127660	A1	20030710	US 2002-329909	20021226
US 2004259363	A1	20041223	US 2004-877698	20040625

PRIORITY APPLN. INFO.:

US 1998-92120P	P	19980401
US 1998-167795	A2	19981007
US 1999-350956	A3	19990709

AB Compns. are described which comprise a population of quantum dots (QDs) having a selected size distribution embedded in a host matrix, the QDs being selected to photoluminesce when irradiated by light from a primary source. The size distribution of the QDs may be chosen to cause light of a particular color to be emitted. Prepolymer compns. of the QDs with precursors for producing the host matrix are also described. Methods of producing light of desired colors using the compns. are also described. Devices are described which employ the compns. in combination with a primary light source (e.g., an electroluminescent device) to produce light of a desired color. The light emitted from the device may be of either a pure (monochromatic) color, or a mixed (polychromatic) color, and may consist solely of light emitted from the QDs themselves, or of a mixture of light emitted from the QDs and light emitted from the primary source. The QDs may optionally be overcoated to increase photoluminescence.

IT **12032-36-9**, Magnesium sulfide
(**photoluminescent** quantum dot compns. and **light-emitting** devices with color conversion **layers** formed from them and their use for producing light of desired colors)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg═S

IC ICM H01L033-00
ICS H01J001-62
INCL 313501000; 313502000; 313503000; 257089000; 257098000; 257100000
CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
ST photoluminescent quantum dot compn; light emitting device quantum dot color conversion **layer**
IT Hydrogels
(host; photoluminescent quantum dot compns. and light-emitting devices with color conversion **layers** formed from them and their use for producing light of desired colors)
IT Acrylic polymers, uses
Polyimides, uses
Silicate glasses
(host; photoluminescent quantum dot compns. and light-emitting devices with color conversion **layers** formed from them and their use for producing light of desired colors)
IT Electroluminescent devices
Light sources
Luminescent substances
Quantum dot devices
Quantum size effect
(photoluminescent quantum dot compns. and light-emitting devices with color conversion **layers** formed from them and their use for producing light of desired colors)
IT Epoxy resins, uses
Peptides, uses
Poly(arylenealkenylenes)
Polydiacetylenes
Polyethers, uses
Polyphosphates
Polysaccharides, uses
Polysiloxanes, uses
Polysulfones, uses
Silica gel, uses
(photoluminescent quantum dot compns. and light-emitting devices with color conversion **layers** formed from them and their use for producing light of desired colors)
IT Conducting polymers
(polythiophenes; photoluminescent quantum dot compns. and light-emitting devices with color conversion **layers** formed from them and their use for producing light of desired colors)
IT 111-40-0D, Diethylenetriamine, reaction products with formaldehyde-Ph glycidyl ether copolymer and 6-mercaptohexanol 1633-78-9D, 6-Mercaptohexanol, reaction products with diethylenetriamine and formaldehyde-Ph glycidyl ether copolymer 7631-86-9, Silica, uses 9003-53-6, Polystyrene 97052-23-8D, Formaldehyde-phenyl glycidyl ether copolymer, reaction products with diethylenetriamine and 6-mercaptohexanol 146250-82-0, 1,6-Hexanediol dimethacrylate-lauryl methacrylate copolymer
(host; photoluminescent quantum dot compns. and light-emitting devices with color conversion **layers** formed from them and their use for producing light of desired colors)
IT 1303-00-0, Gallium arsenide, uses 1303-11-3, Indium arsenide, uses 1306-19-0, Cadmium oxide, uses 1306-23-6, Cadmium

sulfide, uses 1306-24-7, Cadmium selenide, uses 1306-25-8, Cadmium telluride, uses 1312-41-0, Indium antimonide 1313-04-8, Magnesium selenide 1314-13-2, Zinc oxide (ZnO), uses 1314-98-3, Zinc sulfide, uses 1315-09-9, Zinc selenide 1315-11-3, Zinc telluride 1344-48-5, Mercury sulfide (HgS) 9002-88-4, Polyethylene 9003-05-8, Polyacrylamide 9004-34-6, Cellulose, uses 9012-36-6, Agarose **12032-36-9**, Magnesium sulfide 12063-98-8, Gallium phosphide (GaP), uses 12064-03-8, Gallium antimonide 12068-90-5, Mercury telluride 20601-83-6, Mercury selenide (HgSe) 20859-73-8, Aluminum phosphide 21908-53-2, Mercury oxide (HgO) 22398-80-7, Indium phosphide, uses 22831-42-1, Aluminum arsenide 24304-00-5, Aluminum nitride 25152-52-7, Aluminum antimonide 25617-97-4, Gallium nitride 25617-98-5, Indium nitride 30604-81-0, Polypyrrole 82370-43-2, Polyimidazole
(**photoluminescent** quantum dot compns. and **light-emitting** devices with color conversion **layers** formed from them and their use for producing light of desired colors)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 4 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:408197 HCAPLUS
DOCUMENT NUMBER: 140:414645
TITLE: Color conversion phosphors for **luminescent** conversion **LEDs** and devices using them
PATENT ASSIGNEE(S): Osram Opto Semiconductors G.m.b.H., Germany
SOURCE: Ger. Gebrauchsmusterschrift, 8 pp.
CODEN: GGXXFR
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 20218718	U1	20040519	DE 2002-20218718	2002 1202
PRIORITY APPLN. INFO.:			DE 2002-20218718	2002 1202

AB Color-converting phosphors for use in **luminescent** conversion **light-emitting** devices comprise europium-doped alkaline earth thiosilicates which are described by the general formula A2-xSiS4:Eux (A = Sr, Ca, and/or Mg; and x = 0.005-0.05) and which emit in the 490-560 nm (preferably 545-560 nm) region on excitation in the 300-460 nm region. **Luminescent** conversion **light-emitting** devices employing the phosphors, and illumination apparatus employing the **light-emitting** devices, are also described.

IT **690269-38-6 690269-39-7 690269-40-0 690269-41-1**
(color conversion phosphors based on europium-doped alkaline earth

thiosilicates for **luminescent** conversion **light-emitting** devices and devices using them)

RN 690269-38-6 HCAPLUS
CN Calcium europium magnesium strontium thiosilicate (Ca0.2Eu0.02Mg0.2Sr1.58(SiS4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S4Si	1	51148-24-4
Ca	0.2	7440-70-2
Eu	0.02	7440-53-1
Sr	1.58	7440-24-6
Mg	0.2	7439-95-4

RN 690269-39-7 HCAPLUS
CN Calcium europium magnesium strontium thiosilicate (Ca0.2Eu0.02Mg0.4Sr1.39(SiS4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S4Si	1	51148-24-4
Ca	0.2	7440-70-2
Eu	0.02	7440-53-1
Sr	1.39	7440-24-6
Mg	0.4	7439-95-4

RN 690269-40-0 HCAPLUS
CN Calcium europium magnesium strontium thiosilicate (Ca0.2Eu0.02Mg0.59Sr1.19(SiS4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S4Si	1	51148-24-4
Ca	0.2	7440-70-2
Eu	0.02	7440-53-1
Sr	1.19	7440-24-6
Mg	0.59	7439-95-4

RN 690269-41-1 HCAPLUS
CN Calcium europium magnesium strontium thiosilicate (Ca0.3Eu0.02Mg0.1Sr1.58(SiS4)) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S4Si	1	51148-24-4
Ca	0.3	7440-70-2
Eu	0.02	7440-53-1
Sr	1.58	7440-24-6
Mg	0.1	7439-95-4

IC ICM H01L033-00
ICS C09K011-59; C09K011-56; C09K011-55
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **luminescent** conversion **light emitting**

device alk earth thiosilicate phosphor; europium doped alk earth thiosilicate color conversion phosphor

IT **Electroluminescent** devices
Phosphors
(color conversion phosphors based on europium-doped alkaline earth thiosilicates for **luminescent** conversion **light-emitting** devices and devices using them)

IT Group VIA element compounds
Silicates, uses
(thiosilicates, alkaline earth, europium-doped; color conversion phosphors based on europium-doped alkaline earth thiosilicates for **luminescent** conversion **light-emitting** devices and devices using them)

IT 7440-53-1, Europium, uses
(alkaline earth thiosilicates doped with; color conversion phosphors based on europium-doped alkaline earth thiosilicates for **luminescent** conversion **light-emitting** devices and devices using them)

IT 690269-36-4, Europium strontium thiosilicate (Eu0.02Sr1.98(SiS4))
690269-37-5 **690269-38-6 690269-39-7**
690269-40-0 690269-41-1
(color conversion phosphors based on europium-doped alkaline earth thiosilicates for **luminescent** conversion **light-emitting** devices and devices using them)

L38 ANSWER 5 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:154871 HCAPLUS
DOCUMENT NUMBER: 138:212581
TITLE: Luminous device
INVENTOR(S): Seo, Satoshi; Imai, Keitaro
PATENT ASSIGNEE(S): Semiconductor Energy Laboratory Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 41 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003038594	A1	20030227	US 2002-219297	2002 0816
JP 2003178882	A2	20030627	JP 2002-241318	2002 0822
JP 2004079452	A2	20040311	JP 2002-241401	2002 0822
CN 1407836	A	20030402	CN 2002-142069	2002 0826
PRIORITY APPLN. INFO.:			JP 2001-255262 A	2001 0824

JP 2002-241318 A3
2002
0822

AB Light-emitting devices comprising an anode; a cathode; an organic compound **layer** provided between the anode and the cathode; and a conductive film comprising an inorg. compound provided between the organic compound **layer** and the cathode are described in which the conductive film comprises a material having a smaller work function than the cathode (e.g., ≤3.5 eV) and an elec. conductivity of ≥1 + 10-10 S/m. The film can be thicker than that of a conventional cathode buffer **layer** formed by using an insulating material. Displays employing the devices integrated with thin-film transistors are also described.

IT **12032-36-9**, Magnesium sulfide
(**light-emitting** devices with cathode-side conductive buffer **layers**)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg═S

IC ICM H05B033-00

INCL 313506000

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

ST light emitting device conductive buffer **layer**

IT Electric conductors
Electroluminescent devices
(light-emitting devices with cathode-side conductive buffer **layers**)

IT 1314-96-1, Strontium sulfide 1343-88-0, Magnesium silicate 1344-95-2, Calcium silicate 12007-25-9, Magnesium boride (MgB2) 12008-21-8, Lanthanum boride 12013-82-0, Calcium nitride **12032-36-9**, Magnesium sulfide 12057-71-5, Magnesium nitride 12650-28-1, Barium silicate. 12712-63-9, Strontium silicate 20548-54-3, Calcium sulfide 21109-95-5, Barium sulfide 53801-50-6, Yttrium boride 97793-35-6, Cerium boride.
(**light-emitting** devices with cathode-side conductive buffer **layers**)

L38 ANSWER 6 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:92432 HCAPLUS

DOCUMENT NUMBER: 138:144835

TITLE: Light-emitting device with organic **layer** doped with photoluminescent material

INVENTOR(S): Duggal, Anil Raj; Srivastava, Alok Mani; Duclos, Steven Jude

PATENT ASSIGNEE(S): General Electric Company, USA

SOURCE: U.S., 13 pp.
CODEN: USXXAM

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 6515314	B1	20030204	US 2000-713394	2000 1116
US 2003094626	A1	20030522	US 2002-298202	2002 1115
US 6777724	B2	20040817		
PRIORITY APPLN. INFO.:			US 2000-713394 A3	2000 1116

AB A light-emitting **device** is described comprising an anode; a cathode; and at least one organic electroluminescent (EL) material disposed between the anode and the cathode, the organic EL material having a plurality of nanoparticles of at least one **inorg. photoluminescent** (PL) material dispersed therein, the organic EL material being capable of emitting a first electromagnetic (EM) radiation having a first spectrum in response to an elec. voltage applied through the anode and the cathode, and the inorg. PL material being capable of absorbing a portion of the first EM radiation and emitting a second EM radiation having a second spectrum, wherein the organic EL material having the PL nanoparticles dispersed therein is applied on the anode by a method selected from the group consisting of spin coating, spray coating, dip coating, roller coating, and ink-jet printing.

IC ICM H01L031-072

INCL 257184000; 257040000; 257089000; 257098000; 257103000; 313501000; 313503000; 313506000; 313507000

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 22, 38, 76

IT Polymers, uses
(alkyl fluorene; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT Metal alkoxides
(aluminum, organic light emitting material, alkyl phenoxide; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT Electroluminescent devices
(light-emitting device with organic **layer** doped with phosphor)

IT Ink-jet printing
(light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT Phenols, uses
(metal salts, organic light emitting material; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT Polysilanes
(organic light emitting material; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 1312-43-2, Indium oxide 1314-13-2, Zinc oxide, uses 1332-29-2, Tin oxide 50926-11-9, Indium tin oxide 117944-65-7, Indium zinc oxide
(anode; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 7429-90-5, Aluminum, uses 7439-91-0, Lanthanum, uses

7439-93-2, Lithium, uses 7439-95-4, **Magnesium**, uses 7440-09-7, Potassium, uses 7440-22-4, Silver, uses 7440-23-5, Sodium, uses 7440-24-6, Strontium, uses 7440-31-5, Tin, uses 7440-39-3, Barium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2, **Calcium**, uses 7440-74-6, Indium, uses
(cathode; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 86-73-7D, Fluorene, nitro derivative 91-19-0D, Quinoxaline, derivs. 91-22-5D, Quinoline, derivs. 844-51-9D, derivs. 2085-33-8, Tris(8-quinolinolato)aluminum 11120-54-0D, Oxadiazole, derivs.
(electron injection material; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 128-69-8, 3,4,9,10-Perylenetetra-carboxylic dianhydride 135704-54-0
(hole injection material; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 25067-59-8, Poly(N-vinylcarbazole)
(light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 91-64-5, Coumarin 106-99-0D, Butadiene, tetra-Ph 120-12-7, Anthracene, uses 191-07-1, Coronene 198-55-0, Perylene 517-51-1, Rubrene 632-51-9 7440-20-2D, Scandium, alkylphenoxide 7440-55-3D, Gallium, alkylphenoxide 7440-74-6D, Indium, alkylphenoxide 13963-57-0, Tris(acetylacetonate)aluminum 14284-94-7, Tris(acetylacetonato)scandium 14405-43-7, Tris(acetylacetonate)gallium 14405-45-9, Tris(acetylacetonato)indium 25190-62-9, Poly(1,4-phenylene) 28802-91-7, Phenylanthracene 153521-90-5, 1,3,5-Tris[N-(4-diphenylaminophenyl)phenylamino] benzene
(organic light emitting material; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 1309-48-4, **Magnesium** oxide, uses
(phosphor, mixture of germanium oxide and fluoride; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 1310-53-8, Germanium oxide (GeO2), uses
(phosphor, mixture of **magnesium** oxide and fluoride; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 7783-40-6, **Magnesium** fluoride
(phosphor, mixture of **magnesium** oxide and germanium oxide; light-emitting device with organic **layer** doped with phosphor fabricated by using)

IT 1314-36-9, Yttrium oxide (Y2O3), uses 7440-27-9, Terbium, uses 7440-45-1, Cerium, uses 11088-40-7, Strontium chloride phosphate (Sr5Cl(PO4)3) 12005-21-9, Aluminum yttrium oxide (Al5Y3O12) 12027-88-2, Yttrium silicate (Y2SiO5) 13709-90-5, Gadolinium borate (GdBO3) 18923-26-7, Cerium(3+), uses 20644-06-8, **Magnesium** strontium pyrophosphate (MgSrP2O7) 22541-20-4, Terbium(3+), uses 55070-88-7, Aluminum cerium **magnesium** oxide (Al11CeMgO19) 55134-50-4, Aluminum barium **magnesium** oxide (Al16BaMg2O27) 99533-22-9, **Calcium magnesium** chloride silicate (Ca8MgCl2(SiO4)4) 352033-92-2 494201-96-6, Aluminum cerium gadolinium yttrium oxide (Al5(Ce,Gd,Y)3O12) 494201-97-7, Aluminum cerium gallium yttrium oxide ((Al,Ga)5(Ce,Y)3O12) 494201-98-8 494201-99-9, Gadolinium vanadium yttrium borate oxide ((Gd,Y)V0-1(BO3)0-1O1-4)
(phosphor; light-emitting device with organic **layer**

doped with phosphor fabricated by using)
IT 7439-96-5, Manganese, uses 7440-53-1, Europium, uses
7440-69-9, Bismuth, uses 16397-91-4, Manganese(2+), uses
16910-54-6, Europium(2+), uses 19768-33-3, Manganese(4+), uses
22541-18-0, Europium(3+), uses 23713-46-4, Bismuth(3+), uses
(phosphor; light-emitting device with organic **layer**
doped with phosphor fabricated by using)
REFERENCE COUNT: 13 THERE ARE 13 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 7 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:314516 HCAPLUS
DOCUMENT NUMBER: 136:332605
TITLE: **Light-emitting** devices using coated phosphors
INVENTOR(S): Juestel, Thomas; Ronda, Cornelis; Mayr, Walter; Schmidt, Peter; Weiler, Volker
PATENT ASSIGNEE(S): Philips Corporate Intellectual Property Gmbh, Germany; Koninklijke Philips Electronics N.V.
SOURCE: Eur. Pat. Appl., 8 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1199757	A2	20020424	EP 2001-124584	2001 1015
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
DE 10051242	A1	20020425	DE 2000-10051242	2000 1017
CN 1349262	A	20020515	CN 2001-138578	2001 1014
US 2002105266	A1	20020808	US 2001-978995	2001 1016
JP 2002223008	A2	20020809	JP 2001-319186	2001 1017
PRIORITY APPLN. INFO.:			DE 2000-10051242 A	2000 1017

AB **Light-emitting** elements are described which comprise a **light-emitting** diode and a phosphor layer which incorporates coated (with organic, inorg. or glassy materials) phosphors. The phosphor coatings may comprise polyorganosiloxanes, latexes, borosilicate glasses, phosphosilicate glasses, alkali metal silicate glasses, oxides, borates, and/or phosphates. The phosphors may be oxide phosphors, borate phosphors, sulfide phosphors, aluminate phosphors, vanadate phosphors, and/or silicate phosphors.

IT **119537-26-7**, Magnesium calcium sulfide (Mg0-1Ca0-1S)
(europium-activated; **light-emitting** devices with phosphor layers including coated phosphors)
RN 119537-26-7 HCAPLUS
CN Calcium magnesium sulfide ((Ca,Mg)S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0 - 1	7440-70-2
Mg	0 - 1	7439-95-4

IC ICM H01L033-00
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
ST **light emitting** device phosphor layer coated phosphor
IT Silicate glasses
(alkali metal silicate; **light-emitting** devices with phosphor layers including coated phosphors)
IT **Electroluminescent** devices
Latex
Phosphors
(**light-emitting** devices with phosphor layers including coated phosphors)
IT Aluminates
Borates
Borosilicate glasses
Oxides (inorganic), uses
Phosphates, uses
Phosphosilicate glasses
Polysiloxanes, uses
Silicates, uses
Sulfides, uses
(**light-emitting** devices with phosphor layers including coated phosphors)
IT Group VB element compounds
(vanadates; **light-emitting** devices with phosphor layers including coated phosphors)
IT 1314-96-1, Strontium sulfide
(cerium- or europium-activated; **light-emitting** devices with phosphor layers including coated phosphors)
IT 12525-03-0, Calcium lanthanum sulfide (CaLa2S4)
(cerium-activated; **light-emitting** devices with phosphor layers including coated phosphors)
IT 1309-48-4, Magnesium oxide (MgO), uses 1312-76-1, Potassium silicate 7631-86-9, Silica, uses 7784-30-7, Aluminum phosphate (AlPO4)
(coating; **light-emitting** devices with phosphor layers including coated phosphors)
IT 12535-38-5, Strontium yttrium sulfide (SrY2S4) 12592-70-0, Strontium gallium sulfide (SrGa2S4) 82992-94-7, Calcium strontium sulfide ((Ca,Sr)S) **119537-26-7**, Magnesium calcium sulfide (Mg0-1Ca0-1S) 272792-87-7
(europium-activated; **light-emitting** devices with phosphor layers including coated phosphors)
IT 12005-21-9, YAG 12254-04-5, Barium magnesium aluminate

(BaMgAl10O17) 20548-54-3, Calcium sulfide 284461-18-3, Aluminum gadolinium gallium yttrium oxide (Al0-5Gd0-3Ga0-5Y0-3O12)
(**light-emitting** devices with phosphor layers including coated phosphors)
IT 7439-96-5, Manganese, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses
(phosphors activated with; **light-emitting** devices with phosphor layers including coated phosphors)

L38 ANSWER 8 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:107711 HCAPLUS
DOCUMENT NUMBER: 136:158612
TITLE: **Luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion
INVENTOR(S): Danielson, Earl; Ellens, Andries; Jermann, Frank; Rossner, Wolfgang; Devenney, Martin; Giaquinta, Daniel; Kobusch, Manfred
PATENT ASSIGNEE(S): Osram Opto Semiconductors G.m.b.H. & Co. OHG, Germany; Symyx Technologies Inc.
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002011173	A1	20020207	WO 2001-US23665	2001 0727
W: JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1328959	A1	20030723	EP 2001-959261	2001 0727
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2004505172	T2	20040219	JP 2002-516806	2001 0727
US 2004124758	A1	20040701	US 2003-333725	2003 0123
US 6850002	B2	20050201		
PRIORITY APPLN. INFO.:			US 2000-221414P P	2000 0728
			WO 2001-US23665 W	2001 0727

AB **Light emitting** devices are described comprising at least one **LED** with primary emission (peak) from 370 to 480 nm covered directly or indirectly with a phosphor-containing covering, the phosphor-containing covering comprising

at least one of the following phosphors: type I: a metal sulfide **photoluminescent** material activated with europium containing at least one element M selected from the group consisting of Ba, Mg, and Zn; type II: a complex thiometallate **photoluminescent** material activated with at least one of europium and cerium, containing (1) at least one element M* selected from the group consisting of Mg, and Zn, and (2) at least one element N* selected from the group consisting of Al, Ga, In, Y, La, Gd. Phosphors which absorb radiation having a first spectrum and emits radiation having a second spectrum are also described comprising a **luminescent** metal sulfide MS comprising at least one element selected from the group M = Ba, Mg, and Zn alone or in combination with at least one of Sr, Ca; M being activated with europium, or a **luminescent** phosphor comprising a complex metal thiometallate **photoluminescent** material M*N*2S4 comprising of at least one element selected from the group M* = Mg, Zn, alone or in combination with at least one of Ba, Sr, Ca, and at least one element selected from the group N* = Al, Ga, alone or in combination with In, Y, La, Gd, N* being activated with at least one of Eu and Ce.

IT **389063-68-7**, Barium calcium europium gallium magnesium sulfide (Ba0.2Ca0.15Eu0.05Ga2Mg0.6S4) **393587-13-8** **393587-14-9** **393587-22-9**
(**luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion)

RN 389063-68-7 HCAPLUS
CN Barium calcium europium gallium magnesium sulfide (Ba0.2Ca0.15Eu0.05Ga2Mg0.6S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.15	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.2	7440-39-3
Mg	0.6	7439-95-4

RN 393587-13-8 HCAPLUS
CN Calcium europium gallium magnesium strontium sulfide (Ca0.3Eu0.05Ga2Mg0.55Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.3	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.1	7440-24-6
Mg	0.55	7439-95-4

RN 393587-14-9 HCAPLUS
CN Barium calcium europium gallium magnesium sulfide (Ba0.23Ca0.17Eu0.05Ga2Mg0.55S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

S	4	7704-34-9
Ca	0.17	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.23	7440-39-3
Mg	0.55	7439-95-4

RN 393587-22-9 HCAPLUS
CN Calcium europium gallium magnesium strontium sulfide (Ca0.28Eu0.05Ga2Mg0.57Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.28	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Sr	0.1	7440-24-6
Mg	0.57	7439-95-4

IC ICM H01J033-00
ICS H01J001-62
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
ST **light emitting** diode phosphor **luminescence** conversion
IT **Electroluminescent** devices
Phosphors
(**luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion)
IT Sulfides, uses
(phosphor; **luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion)
IT 7440-53-1, Europium, uses
(**luminescence** activator; **luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion)
IT 7440-45-1, Cerium, uses
(**luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion)
IT 7429-90-5, Aluminum, occurrence 7439-91-0, Lanthanum, occurrence 7439-95-4, Magnesium, occurrence 7440-24-6, Strontium, occurrence 7440-39-3, Barium, occurrence 7440-54-2, Gadolinium, occurrence 7440-55-3, Gallium, occurrence 7440-65-5, Yttrium, occurrence 7440-66-6, Zinc, occurrence 7440-70-2, Calcium, occurrence 7440-74-6, Indium, occurrence
(**luminescence** conversion based **light emitting** diode and phosphors for wavelength conversion)
IT **389063-68-7**, Barium calcium europium gallium magnesium sulfide (Ba0.2Ca0.15Eu0.05Ga2Mg0.6S4) 389063-72-3, Barium europium gallium magnesium sulfide (Ba0.38Eu0.05Ga2Mg0.57S4) 393587-09-2 393587-10-5 393587-11-6, Europium strontium sulfide (Eu0.02Sr0.98S) 393587-12-7 **393587-13-8** **393587-14-9** 393587-15-0 393587-16-1 393587-17-2 393587-18-3 393587-19-4 393587-20-7 393587-21-8 **393587-22-9** 393587-23-0
(**luminescence** conversion based **light**

emitting diode and phosphors for wavelength conversion)
REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 9 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:91285 HCAPLUS
DOCUMENT NUMBER: 136:223555
TITLE: Photoluminescence studies of the formation of MgS/CdSe quantum dots grown by molecular beam epitaxy
AUTHOR(S): Funato, M.; Bradford, C.; Balocchi, A.; Smith, J. M.; Prior, K. A.; Cavenett, B. C.
CORPORATE SOURCE: Department of Physics, Heriot-Watt University, Edinburgh, EH14 4AS, UK
SOURCE: Physica Status Solidi B: Basic Research (2002), 229(1), 477-480
CODEN: PSSBBD; ISSN: 0370-1972
PUBLISHER: Wiley-VCH Verlag Berlin GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The optical properties of MgS/CdSe quantum structures grown by MBE were characterized by photoluminescence (PL) spectroscopy. The increase in the CdSe thickness from 1 to beyond 3 monolayers gave, at 1st, quantum wells (QWs) and then quantum dots (QDs) by Stranski-Krastanov growth. The PL temperature dependence measurements show clear difference in the optical properties of QWs and QDs.
IT **12032-36-9**, Magnesium sulfide
(**photoluminescence** studies of formation of MgS/CdSe quantum dots grown by mol. beam epitaxy)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
IT 137575-57-6, Magnesium zinc selenide sulfide mg0-1zn0-1se0-1s0-1
(capping **layer**; photoluminescence studies of formation of MgS/CdSe quantum dots grown by mol. beam epitaxy)
IT 1306-24-7, Cadmium selenide, properties **12032-36-9**, Magnesium sulfide
(**photoluminescence** studies of formation of MgS/CdSe quantum dots grown by mol. beam epitaxy)
REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 10 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:71954 HCAPLUS
DOCUMENT NUMBER: 136:126332
TITLE: Organic-inorganic hybrid light emitting devices (HLED)
INVENTOR(S): Sellinger, Alan; Laine, Richard M.
PATENT ASSIGNEE(S): Canon Kabushiki Kaisha, Japan
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2

DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002005971	A1	20020124	WO 2001-US41351	2001 0713
W: JP, KP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
US 6517958	B1	20030211	US 2000-616561	2000 0714
JP 2004506050	T2	20040226	JP 2002-511899	2001 0713

PRIORITY APPLN. INFO.:
US 2000-616561 A 2000 0714
WO 2001-US41351 W 2001 0713

AB Organic-inorg. hybrid light-emitting **device** (HLED) materials are described which comprise a silsesquioxane structure, especially a polyhedral silsesquioxane structure, having ≥1 functional moiety substituent selected from hole transport, electron transport, and emissive material moieties. Organic-inorg. HLEDs are also described which comprise an anode containing a high work function metal or metal alloy; a cathode containing a low work function metal or metal alloy; and a **layer** of organic-**inorg. luminescent** material comprising the silsesquioxane structures elec. connected to the anode and cathode.

IC ICM B05D003-02

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 37

IT **Calcium** alloy, nonbase
Magnesium alloy, nonbase
Sodium alloy, nonbase
(organic-inorg. hybrid light-emitting device materials based on substituted silsesquioxanes and devices using them)

IT 2085-33-8, Tris(8-hydroxyquinolinato)aluminum 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7439-95-4, **Magnesium**, uses 7440-22-4, Silver, uses 7440-23-5, Sodium, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-70-2, **Calcium**, uses 50926-11-9, Indium tin oxide 69655-76-1D, Octavinylsilsesquioxane, reaction products with polyfluorenes 73695-68-8 98743-33-0, Tin fluoride oxide 126213-51-2 195456-48-5D, Poly(9,9-dioctyl-9H-fluorene-2,7-diyl), reaction products with octavinylsilsesquioxane
(organic-inorg. hybrid light-emitting device materials based on substituted silsesquioxanes and devices using them)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE

FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 11 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:43950 HCAPLUS
DOCUMENT NUMBER: 136:109844
TITLE: An efficient **luminescent** substance
PATENT ASSIGNEE(S): OSRAM Opto Semiconductors Gmbh & Co. Ohg, Germany
SOURCE: Ger. Gebrauchsmusterschrift, 11 pp.
CODEN: GGXXFR
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 20108873	U1	20020117	DE 2001-20108873	2001 0529
CA 2448529	AA	20021205	CA 2001-2448529	2001 0607
WO 2002097901	A1	20021205	WO 2001-DE2131	2001 0607
W: CA, CN, JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
EP 1390989	A1	20040225	EP 2001-947188	2001 0607
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2004527638	T2	20040909	JP 2003-500984	2001 0607
US 2004135123	A1	20040715	US 2003-477549	2003 1112

PRIORITY APPLN. INFO.:	DE 2001-20108873	U	2001 0529
	WO 2001-DE2131	W	2001 0607

AB This thiometallate is based on the general formula, AB2S4:D2+, where A is a divalent cation such as Ba or it is in a combination with Mg and/or Ca; where B is a trivalent cation, one of Al, Ga or Y; and D is an activator, Eu and/or Ce can be selected. The composition of the **luminescent** substance is chosen to correspond to (AS)·w(B2S3), where w is in the range $0.8 \leq w \leq 0.98$ or $1.02 \leq w < 1.2$. B in the formula can be Ga, partially substituted for by Al; A can be a combination of Mg, Ca and Ba; and the activator Eu can also substitute for A. The formula can also be expressed by (AS)·w(Ga2S3) where

A=MgaCabBacEut and a+b+c=1 with 0.4≤a≤0.8,
0.5≤b≤0.35, 0.05≤c≤0.4,
0.01≤t≤0.1, 0.8≤w≤0.98 or
1.02≤w≤1.2. Another alternative is
(AS)·w(Ga2S3) where A=MgaBabEut and a+b+t=1 with
0.4≤a≤0.8, 0.1≤b≤0.59,
0.01≤t≤0.1, 0.8≤w≤0.98 or
1.02≤w≤1.2.

IT **389063-67-6P 389063-68-7P 389063-69-8P**
389063-70-1P
(efficient **luminescent** substance)

RN 389063-67-6 HCAPLUS
CN Barium calcium europium gallium magnesium sulfide
(Ba0.2Ca0.15Eu0.05Ga1.8Mg0.6S3.7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	3.7	7704-34-9
Ca	0.15	7440-70-2
Ga	1.8	7440-55-3
Eu	0.05	7440-53-1
Ba	0.2	7440-39-3
Mg	0.6	7439-95-4

RN 389063-68-7 HCAPLUS
CN Barium calcium europium gallium magnesium sulfide
(Ba0.2Ca0.15Eu0.05Ga2Mg0.6S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.15	7440-70-2
Ga	2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.2	7440-39-3
Mg	0.6	7439-95-4

RN 389063-69-8 HCAPLUS
CN Barium calcium europium gallium magnesium sulfide
(Ba0.2Ca0.15Eu0.05Ga2.2Mg0.6S4.3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4.3	7704-34-9
Ca	0.15	7440-70-2
Ga	2.2	7440-55-3
Eu	0.05	7440-53-1
Ba	0.2	7440-39-3
Mg	0.6	7439-95-4

RN 389063-70-1 HCAPLUS
CN Barium calcium europium gallium magnesium sulfide
(Ba0.2Ca0.15Eu0.05Ga2.4Mg0.6S4.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

S	4.6	7704-34-9
Ca	0.15	7440-70-2
Ga	2.4	7440-55-3
Eu	0.05	7440-53-1
Ba	0.2	7440-39-3
Mg	0.6	7439-95-4

IC ICM C09K011-62
ICS C09K011-84
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 78
ST **electroluminescent** phosphor **luminescence**
barium calcium magnesium europium gallium sulfide
IT Emission spectra
Luminescent substances
Phosphors
Reflection spectra
Solid-gas reaction
(efficient **luminescent** substance)
IT Phosphors
(**electroluminescent**; efficient **luminescent** substance)
IT 7727-37-9, Nitrogen, uses
(efficient **luminescent** substance)
IT **389063-67-6P 389063-68-7P 389063-69-8P**
389063-70-1P 389063-71-2P 389063-72-3P 389063-73-4P
(efficient **luminescent** substance)
IT 471-34-1, Calcium carbonate (CaCO3), reactions 513-77-9, Barium carbonate (BaCO3) 1308-96-9, Europium oxide (Eu2O3) 1309-48-4, Magnesium oxide (MgO), reactions 7697-37-2, Nitric acid, reactions 7783-06-4, Hydrogen sulfide (H2S), reactions 12024-21-4, Gallium oxide (Ga2O3)
(efficient **luminescent** substance)

L38 ANSWER 12 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:904833 HCAPLUS
DOCUMENT NUMBER: 136:45354
TITLE: Highly efficient fluorescent material
INVENTOR(S): Ellens, Andries; Kobusch, Manfred; Rossner, Wolfgang
PATENT ASSIGNEE(S): Patent-Treuhand-Gesellschaft Fuer Elektrische Gluehlampen Mbh, Germany; Osram Opto Semiconductors GmbH & Co. Ohg
SOURCE: PCT Int. Appl., 18 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001095400	A1	20011213	WO 2001-DE2130	2001 0607

W: CA, CN, JP, KR, US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR

DE 10028266	A1	20011213	DE 2000-10028266	2000 0609
CA 2381443	AA	20011213	CA 2001-2381443	2001 0607
EP 1290737	A1	20030312	EP 2001-947187	2001 0607
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2003535964	T2	20031202	JP 2002-502837	2001 0607
TW 554031	B	20030921	TW 2001-90113951	2001 0608
US 2002149001	A1	20021017	US 2002-48963	2002 0204
US 6695982	B2	20040224		
PRIORITY APPLN. INFO.:			DE 2000-10028266 A	2000 0609
			WO 2001-DE2130 W	2001 0607

AB Thiometallate phosphors described approx. by the general formula AB2S4:D2+ (A = ≥1 divalent cation selected from Mg, Ca, and/or Sr; B = ≥1 trivalent cation selected from Al, Ga, and/or Y; and D = Eu and/or Ce) are described which the actual composition is chosen to correspond to (AS).w(B2S3) (0.8 ≤ w ≤ 0.98 or 1.02 ≤ w ≤ 1.2). Preferably the phosphors are thiogallates. Methods for preparing the thiometallate phosphors are described which entail forming a suspension of nitrates in amts. corresponding to the desired composition; drying the suspension at ≤300° so that the residual moisture content is < 1 weight% to produce a finely dispersed nitrate mixture; grinding the nitrate mixture in a mortar at room temp for 10-60 min (preferably 15-25 min); pyrolyzing the ground mixture at 500-700° (preferably 600°) under an Ar or N2 atmospheric to produce a mixture of metal oxides corresponding to the desired composition; carrying out a first conversion of the metal oxide mixture at 800-1000° (preferably 900-950°) under flowing H2S and/or CS2 for 1-6 h (preferably 4 h); grinding the product; and carrying out a second conversion at 800-1000° (preferably 900-950°) under flowing H2S and/or CS2 for 1-6 h (preferably 2 h). Use of the phosphors as color conversion phosphors in **light-emitting** devices or plasma displays is also described.

IT **379735-68-9P 379735-70-3P 379735-72-5P 379735-73-6P 379735-76-9P**
(thiometallate phosphors and their production and use)

RN 379735-68-9 HCAPLUS

CN Calcium europium gallium magnesium strontium sulfide (Ca0.21Eu0.06Ga1.8Mg0.63Sr0.1S3.7) (9CI) (CA INDEX NAME)

Component	Ratio	Component

		Registry Number
S	3.7	7704-34-9
Ca	0.21	7440-70-2
Ga	1.8	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-70-3 HCAPLUS
CN Calcium europium gallium magnesium strontium sulfide (Ca0.21Eu0.06Ga2Mg0.63Sr0.1S4) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4	7704-34-9
Ca	0.21	7440-70-2
Ga	2	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-72-5 HCAPLUS
CN Calcium europium gallium magnesium strontium sulfide (Ca0.21Eu0.06Ga2.2Mg0.63Sr0.1S4.3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4.3	7704-34-9
Ca	0.21	7440-70-2
Ga	2.2	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-73-6 HCAPLUS
CN Calcium europium gallium magnesium strontium sulfide (Ca0.21Eu0.06Ga2.4Mg0.63Sr0.1S4.6) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4.6	7704-34-9
Ca	0.21	7440-70-2
Ga	2.4	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

RN 379735-76-9 HCAPLUS
CN Calcium europium gallium magnesium strontium sulfide (Ca0.21Eu0.06Ga2.5Mg0.63Sr0.1S4.75) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	4.75	7704-34-9
Ca	0.21	7440-70-2

Ga	2.5	7440-55-3
Eu	0.06	7440-53-1
Sr	0.1	7440-24-6
Mg	0.63	7439-95-4

IC ICM H01L033-00
ICS H01J017-49
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74
IT **379735-68-9P 379735-70-3P 379735-72-5P 379735-73-6P 379735-76-9P**
(thiometallate phosphors and their production and use)
REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 13 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:802154 HCAPLUS
DOCUMENT NUMBER: 133:342261
TITLE: Organic electroluminescent devices and manufacture
INVENTOR(S): Kawamura, Hisayuki
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 14 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000315581	A2	20001114	JP 1999-124476	1999 0430

PRIORITY APPLN. INFO.: JP 1999-124476 1999 0430

AB The devices comprise: (1) an anode; (2) a 1st organic semiconductor **layer**; (3) a 1st inorg. charge barrier **layer**; (4) an organic phosphor **layer**; (5) a 2nd inorg. charge barrier **layer**; (6) a 2nd organic semiconductor **layer**; and (7) a cathode, where (2) and (6) have a specific resistivity 1 x 10-1 - 1 x 109 Ω cm and 0.1-500 nm thick; and (3) and (5) comprise Si oxide, ZnO, GaN, GaInN, p-a-Si1-xNx (0.5 < x < 1), a-Si1-xNx (0.4 < x < 1), diamond-like carbon, Li2O, LiF, CsF, Cs2O, LiCl, BaO, SrO, MgO, MgF2, SrCl2, or a AB compound (A = chalcogenide or nitride of Si, Ge, Sn, Pb, Ga, In, Zn, Cd and Mg; B = compound of Groups 5A-8).
IC ICM H05B033-22
ICS H05B033-22; H05B033-10; H05B033-14
CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
ST org **electroluminescence inorg** charge barrier **device**
IT 84-58-2 147-14-8, Copper phthalocyanine 1304-28-5, Barium oxide (BaO), uses 1309-48-4, **Magnesium** oxide (MgO),

uses 1314-11-0, Strontium oxide (SrO), uses 1314-13-2, Zinc oxide (ZnO), uses 2085-33-8, Tris(8-quinolinolato)aluminum 7440-44-0, Carbon, uses 7447-41-8, Lithium chloride (LiCl), uses 7631-86-9, Silica, uses 7782-40-3, Diamond, uses 7783-40-6, **Magnesium** fluoride (MgF2) 7789-24-4, Lithium fluoride (LiF), uses 12057-24-8, Lithium oxide (Li2O), uses 13400-13-0, Cesium fluoride (CsF) 20281-00-9, Cesium oxide (Cs2O) 25617-97-4, Gallium nitride (GaN) 50926-11-9, ITO 65181-78-4, TPD 109371-84-8, Silicon nitride (Si0-1N0-1) 120994-23-2, Gallium indium nitride (GaInN) 144810-08-2 213527-39-0 216863-70-6
(organic electroluminescent devices and manufacture)

L38 ANSWER 14 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:790783 HCAPLUS
DOCUMENT NUMBER: 133:342259
TITLE: Organic electroluminescent devices and manufacture
INVENTOR(S): Hosokawa, Chishio; Kawamura, Hisayuki; Nakamura, Hiroaki
PATENT ASSIGNEE(S): Idemitsu Kosan Co., Ltd., Japan
SOURCE: PCT Int. Appl., 47 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000067531	A1	20001109	WO 2000-JP2796	2000 0427
W: CN, JP, KR, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 1111967	A1	20010627	EP 2000-922898	2000 0427
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
TW 463392	B	20011111	TW 2000-89108193	2000 0429
US 2001009351	A1	20010726	US 2001-750682	2001 0102
US 6856089	B2	20050215		
US 2005116634	A1	20050602	US 2004-24729	2004 1230

PRIORITY APPLN. INFO.:	JP 1999-124477	A	1999 0430
	WO 2000-JP2796	W	2000 0427

US 2001-750682 A1
2001
0102

AB The devices comprise: (1) a glass substrate; (2) a noncryst. semiconductor **layer** having an n shoulder electrode; (3) an organic electroluminescent laminate; and (4) a p electrode, where (2) comprises chalcogenides (ZnS, ZnSe, CdS, CdTe, ZnTe, MgS, MgSe, ZnSSe, ZnSSe, ZnMgSSe and ZnTeSe), degenerate metal oxide semiconductors (doped oxides of Al, Sn, Zn, In, Cd, Mg, and Si), carbons or diamond-like carbons, and conductive polymers; and (2) (1-700 nm thick) has a band gap >2.7 eV, a specific resistivity 1 + 10-3 - 1 + 104 Ω cm, and the electronic charge d. 1 + 1012 - 1 + 1020 cm-3.

IT **12032-36-9**, Magnesium sulfide (MgS)
(organic **electroluminescent** devices and manufacture)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H05B033-26
ICS H05B033-28; H05B033-14

CC 73-5 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

IT 147-14-8, Copper phthalocyanine 1306-23-6, Cadmium sulfide (CdS), uses 1306-25-8, Cadmium telluride (CdTe), uses 1313-04-8, Magnesium selenide (MgSe) 1314-98-3, Zinc sulfide (ZnS), uses 1315-09-9, Zinc selenide (ZnSe) 1315-11-3, Zinc telluride (ZnTe) 2085-33-8, Tris(8-quinolinolato)aluminum 7429-90-5, Aluminum, uses 7440-21-3, Silicon, uses 7440-44-0, Carbon, uses 7440-50-8, Copper, uses 7646-85-7, Zinc chloride (ZnCl2), uses 7782-40-3, Diamond, uses 7789-24-4, Lithium fluoride (LiF), uses **12032-36-9**, Magnesium sulfide (MgS) 59989-74-1, Zinc selenide sulfide (Zn(Se,S)) 65181-78-4, TPD 108821-49-4, Zinc selenide telluride (ZnSeTe) 123847-85-8, α-NPD 126213-51-2, 3,4-Polyethylenedioxythiophene 137575-57-6, Magnesium zinc selenide sulfide (MgZnSeS)
(organic **electroluminescent** devices and manufacture)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L38 ANSWER 15 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:233676 HCAPLUS
DOCUMENT NUMBER: 130:273898
TITLE: Light-emitting devices and protective coating
INVENTOR(S): Kono, Ichiro; Jobetto, Hiroyasu
PATENT ASSIGNEE(S): Casio Computer Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 11097169 A2 19990409 JP 1997-269218 1997 0917

PRIORITY APPLN. INFO.: JP 1997-269218 1997 0917

AB The devices comprise: a transparent substrate; an ITO anode; an organic electroluminescent **layer**; a cathode; and a protective laser comprising an amorphous host selected from oxide(s) or sulfide(s) of Si, B, Ge, P and As and a guest selected from oxide(s) or sulfide(s) of Al, Zn and Be, where the bonding energies of the host and the guest in the oxides are >370 and ≤370 KJ/mol, resp.; alternative host materials are oxide(s) or sulfide(s) of Al, Zn and/or Be; and alternative guest materials are oxide(s) or sulfide(s) of Sc, La, Y, Sn, Ba, Ca, Sr, Mg, Li, Na, K, Rb, Cs and/or Ce.

IT **12032-36-9**, Magnesium sulfide
(**light-emitting** devices and protective coating)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg═S

IC ICM H05B033-04
ICS H05B033-26; H05B033-28

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

IT 1302-81-4, Aluminum sulfide 1303-33-9, Arsenic sulfide 1303-86-2, Boron oxide, uses 1304-28-5, Barium oxide, uses 1304-56-9, Beryllium oxide, uses 1305-78-8, Calcium oxide, uses 1306-38-3, Cerium oxide, uses 1309-48-4, Magnesium oxide, uses 1310-53-8, Germanium oxide, uses 1312-73-8, Potassium sulfide 1312-81-8, Lanthanum oxide 1313-59-3, Sodium oxide, uses 1313-82-2, Sodium sulfide, uses 1314-11-0, Strontium oxide, uses 1314-13-2, Zinc oxide, uses 1314-36-9, Yttrium oxide, uses 1314-56-3, Phosphorus oxide, uses 1314-96-1, Strontium sulfide 1314-98-3, Zinc sulfide, uses 1327-53-3, Arsenic oxide (As2O3) 1332-29-2, Tin oxide 1344-28-1, Aluminum oxide, uses 7440-45-1, Cerium, uses 11116-22-6, Yttrium sulfide 12014-74-3, Cerium oxide (CeO) **12032-36-9**, Magnesium sulfide 12057-24-8, Lithium oxide, uses 12060-08-1, Scandium oxide 12136-45-7, Potassium oxide, uses 12136-58-2, Lithium sulfide 12214-16-3, Cesium sulfide 12737-58-5, Germanium sulfide 12738-87-3, Tin sulfide 13598-22-6, Beryllium sulfide 18088-11-4, Rubidium oxide 20281-00-9, Cesium oxide 20548-54-3, Calcium sulfide 21109-95-5, Barium sulfide 31083-74-6, Rubidium sulfide 39290-88-5, Cerium sulfide 39431-96-4, Lanthanum sulfide 50926-11-9, ITO 50927-81-6, Silicon sulfide 53096-23-4, Scandium sulfide 54511-24-9, Boron sulfide 62140-13-0, Phosphorus sulfide
(**light-emitting** devices and protective coating)

L38 ANSWER 16 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:501246 HCAPLUS

DOCUMENT NUMBER: 129:154539
TITLE: Light emitting diode
INVENTOR(S): Bojarczuk, Nestor A., Jr.; Guha, Supratik; Haight, Richard Alan
PATENT ASSIGNEE(S): International Business Machines Corp., USA
SOURCE: Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 855751	A2	19980729	EP 1997-310234	1997 1217
EP 855751	A3	19990512		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
US 5898185	A	19990427	US 1997-788509	1997 0124
US 5895932	A	19990420	US 1997-811990	1997 0305
PRIORITY APPLN. INFO.:			US 1997-788509 A	1997 0124
			US 1997-811990 A	1997 0305

AB Hybrid organic-inorg. semiconductor light-emitting diodes comprise an **inorg. electroluminescent layer** and an overlying organic photoluminescent **layer.** The electroluminescent **layer** may be a GaN-system light-emitting diode structure that is electroluminescent in the blue or UV region of the electromagnetic spectrum when the **device** is operated. The photoluminescent **layer** may be formed from tris-(8-hydroxyquinoline)Al (Alq). The UV emission from the electroluminescent region excites the Alq, which photoluminesces in the green. Other colors, such as blue or red, may be obtained by appropriately doping the Alq or by using other luminescent organic compds. This provides the benefits of simplicity and ease of fabrication, since a complete redesign of the structure is not necessary to change emission wavelength, and the possibility for making displays by spatially varying the deposition of the emissive **layer.** Displays employing the **devices** are also described.

IC ICM H01L051-20
ICS H01L033-00

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

IT 7439-95-4, **Magnesium**, uses 7440-21-3, Silicon, uses
(gallium nitride doped with; light-emitting diodes with hybrid organic-inorg. structures)

L38 ANSWER 17 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:1674 HCAPLUS
DOCUMENT NUMBER: 128:81986
TITLE: Non-degenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic electroluminescent devices
INVENTOR(S): Riess, Walter; Strite, Samuel Clagett
PATENT ASSIGNEE(S): International Business Machines Corporation, USA; Riess, Walter; Strite, Samuel Clagett
SOURCE: PCT Int. Appl., 64 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9747050	A1	19971211	WO 1996-IB557	19960605
W: JP, KR, US RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
EP 902983	A1	19990324	EP 1996-915138	19960605
R: DE, FR, GB				
JP 11511895	T2	19991012	JP 1996-500353	19960605
WO 9747051	A1	19971211	WO 1997-IB559	19970516
W: BR, CA, CN, JP, KR, US RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 2000503798	T2	20000328	JP 1998-500357	19970516
KR 2000016407	A	20000325	KR 1998-709981	19981205
US 6433355	B1	20020813	US 1999-155591	19990208

PRIORITY APPLN. INFO.:	WO 1996-IB557 W	19960605
	WO 1997-IB559 W	19970516

AB Organic light-emitting devices comprising a substrate, an anode contact electrode, a cathode contact electrode, and an organic active region are described in which ≥1 of the electrodes

comprises a non-degenerate wide bandgap semiconductor (if a cathode electrons are injected from the semiconductor conduction band into the LUMO of the organic region; if an anode holes are injected from the semiconductor valance band into the HOMO of the organic region). Use of the devices in displays is indicated.

IT **12032-36-9**, Magnesium sulfide
(nondegenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic **electroluminescent** devices)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H01L033-00
ICS H01L051-20

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76

ST org electroluminescent device nondegenerate semiconductor contact; injection **layer** semiconductor org electroluminescent device

IT Electric contacts
Electroluminescent devices
(nondegenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic electroluminescent devices)

IT Group IIIA element nitrides
(nondegenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic electroluminescent devices)

IT 7440-44-0, Carbon, uses
(diamond-like; nondegenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic electroluminescent devices)

IT 409-21-2, Silicon carbide, uses 1304-56-9, Beryllium oxide (BeO), uses 1306-23-6, Cadmium sulfide, uses 1313-04-8, Magnesium selenide 1314-13-2, Zinc oxide (ZnO), uses 1314-98-3, Zinc sulfide, uses 1315-09-9, Zinc selenide 7782-40-3, Diamond, uses 7789-75-5, Calcium difluoride, uses 10043-11-5, Boron nitride, uses **12032-36-9**, Magnesium sulfide 20859-73-8, Aluminum phosphide 24304-00-5, Aluminum nitride 25617-97-4, Gallium nitride 50926-11-9, Indium tin oxide 65181-78-4 106097-44-3, Aluminum gallium nitride ((Al,Ga)N) 120994-23-2, Indium gallium nitride 127575-65-9, Indium aluminum gallium nitride 137575-57-6, Magnesium zinc selenide sulfide ((Mg,Zn)(Se,S)) 200616-82-6, Gallium zinc selenide sulfide ((Ga,Zn)(Se,S))
(nondegenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic **electroluminescent** devices)

IT 7440-21-3, Silicon, uses
(substrate; nondegenerate wide bandgap semiconductors as injection **layers** and/or contact electrodes for organic electroluminescent devices)

L38 ANSWER 18 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:687016 HCAPLUS

DOCUMENT NUMBER: 127:301089
TITLE: Thin-film electroluminescent devices with phosphor **layers** including a Group IIIA metal-containing overlayer
INVENTOR(S): Sun, Sey-Shing; Bowen, Michael S.
PATENT ASSIGNEE(S): USA
SOURCE: U.S., 11 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5677594	A	19971014	US 1995-509745	1995 0801

PRIORITY APPLN. INFO.: US 1995-509745 1995 0801

AB A.c. thin-film electroluminescent devices which comprise an electroluminescent phosphor; a pair of insulating **layers** sandwiching said electroluminescent phosphor; and a pair of electrode **layers** sandwiching said pair of insulating **layers** are described in which the electroluminescent phosphor comprises: a first phosphor **layer** selected from the group consisting of an alkaline earth sulfide, an alkaline earth selenide, and an alkaline earth sulfide selenide, and further including an activator dopant; and an overlayer deposited atop the first phosphor **layer**, said overlayer including a Group 3A metal selected aluminum, gallium, and indium. The Group IIIA element may be incorporated within a related phosphor host compound (e.g., the overlayer for SrS phosphors may be Ca0.5Sr0.5Ga2S4).

IT **12032-36-9**, Magnesium sulfide
(thin-film **electroluminescent** devices with phosphor **layers** including a Group IIIA metal-containing overlayer)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H05B033-00
INCL 313503000
CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
IT Phosphors
(electroluminescent; thin-film electroluminescent devices with phosphor **layers** including a Group IIIA metal-containing overlayer)
IT Electroluminescent devices
(thin-film electroluminescent devices with phosphor **layers** including a Group IIIA metal-containing overlayer)
IT Group IIIA element compounds
(thin-film electroluminescent devices with phosphor

layers including a Group IIIA metal-containing overlayer)
IT 1304-39-8, Barium selenide 1305-84-6, Calcium selenide 1313-04-8, Magnesium selenide 1314-96-1, Strontium sulfide 1314-98-3, Zinc sulfide, uses 1315-07-7, Strontium selenide **12032-36-9**, Magnesium sulfide 20548-54-3, Calcium sulfide 21109-95-5, Barium sulfide 110781-13-0, Calcium selenide sulfide (Ca(Se,S)) 110781-14-1, Strontium selenide sulfide (Sr(Se,S)) 159832-15-2, Calcium strontium thiogallate (Ca0.5Sr0.5Ga2S4) 161173-78-0, Magnesium selenide sulfide (Mg(Se,S)) 197070-32-9, Barium selenide sulfide (Ba(Se,S))
(thin-film **electroluminescent** devices with phosphor **layers** including a Group IIIA metal-containing overlayer)
IT 7440-10-0, Praseodymium, uses 7440-45-1, Cerium, uses 7440-53-1, Europium, uses 7440-60-0, Holmium., uses
(thin-film electroluminescent devices with phosphor **layers** including a Group IIIA metal-containing overlayer)

L38 ANSWER 19 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:655344 HCAPLUS
DOCUMENT NUMBER: 127:339041
TITLE: light-emitting Group II-VI compound device elements
INVENTOR(S): Teraguchi, Nobuaki
PATENT ASSIGNEE(S): Sharp Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 09260788	A2	19971003	JP 1996-70025	19960326
PRIORITY APPLN. INFO.:			JP 1996-70025	19960326

AB A 1st element comprises: a GaAs substrate; and a buffer laminate contg.a GaAs, a GaInAsP and a ZnSe buffer **layer.** A 2nd element comprises a GaAs substrate and a ZnS/MgS strained superlattice buffer **layer.** A 3rd element comprises: a GaAs substrate; a Group IV (Ge) **layer** formed between a Group II-VI and Group III-V compound **layer.** A 4th element comprises: a GaAs substrate; and a buffer laminate comprising a GaAs, a GaInAsP, a ZnSe, and a ZnSe/MgS strained supper lattice **layer.** A 5th element comprises: a GaAs substrate; and a buffer laminate containing a GaAs, a GaInAsP, a Ge, and a ZnSe **layer.**
IT **12032-36-9**, Magnesium sulfide (MgS)
(**light-emitting** Group II-VI compound device elements)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H01S003-18
ICS H01L033-00
CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76
IT 1303-00-0, Gallium arsenide (GaAs), uses 1314-98-3, Zinc sulfide (ZnS), uses 1315-09-9, Zinc selenide (ZnSe) 1315-11-3, Zinc telluride (ZnTe) 7440-56-4, Germanium, uses 12024-22-5, Gallium sulfide (Ga2S3) **12032-36-9**, Magnesium sulfide (MgS) 12645-36-2, Gallium indium arsenide phosphide 59989-74-1, Zinc selenide sulfide (Zn(Se,S)) 107874-73-7, Cadmium zinc selenide (CdZnSe) 137575-57-6, Magnesium zinc selenide sulfide (MgZnSeS)
(**light-emitting** Group II-VI compound device elements)

L38 ANSWER 20 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1996:469981 HCAPLUS
DOCUMENT NUMBER: 125:127352
TITLE: Electroluminescent devices formed using semiconductor nanocrystals as an electron transport media and method of making such electroluminescent devices
INVENTOR(S): Alivisatos, A. Paul; Colvin, Vickie
PATENT ASSIGNEE(S): University of California, USA
SOURCE: U.S., 13 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5537000	A	19960716	US 1994-235443	1994 0429
PRIORITY APPLN. INFO.:			US 1994-235443	1994 0429

AB Electroluminescent devices are described which employ a semiconductor nanocrystal electron transport **layer.** The electron transport **layer** may comprise semiconductor nanocrystals selected from the group consisting Group IIB chalcogenides and Group IIIA pnictides, especially MgS, MgSe, MgTe, CaS, CaSe, CaTe, SrS, SrSe, SrTe, BaS, BaSe, BaTe, ZnS, ZnSe, ZnTe, CdS, CdSe, CdTe; HgS, HgSe, HgTe, GaAs, InAs, InP, and InSb; and mixts. of two or more of the semiconductor compds. The wavelength of the light emitted by the device may be changed by changing either the size or the type of semiconductor nanocrystals used in forming the electron transport **layer.** In a preferred embodiment the device is characterized by the capability of emitting visible light of varying wavelengths in response to changes in the voltage applied to the device. Displays employing

the devices are also described.
IT **12032-36-9**, Magnesium sulfide
(**electroluminescent** devices formed using semiconductor nanocrystals as electron transport media and method of making such **electroluminescent** devices)
RN 12032-36-9 HCAPLUS
CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H05B033-22
INCL 313506000
CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 74, 76
ST electroluminescent device nanocrystal electron transport **layer**; display electroluminescent device nanocrystal electron transport
IT 1303-00-0, Gallium arsenide, uses 1303-11-3, Indium arsenide, uses 1304-39-8, Barium selenide 1305-84-6, Calcium selenide 1306-23-6, Cadmium sulfide, uses 1306-24-7, Cadmium selenide, uses 1306-25-8, Cadmium telluride, uses 1312-41-0, Indium antimonide, uses 1313-04-8, Magnesium selenide 1314-96-1, Strontium sulfide 1314-98-3, Zinc sulfide, uses 1315-07-7, Strontium selenide 1315-09-9, Zinc selenide 1315-11-3, Zinc telluride 1344-48-5, Mercury sulfide (HgS) 12009-36-8, Barium telluride 12013-57-9, Calcium telluride **12032-36-9**, Magnesium sulfide 12032-44-9, Magnesium telluride 12040-08-3, Strontium telluride 12068-90-5, Mercury telluride 20548-54-3, Calcium sulfide 20601-83-6, Mercury selenide (HgSe) 21109-95-5, Barium sulfide 22398-80-7, Indium phosphide, uses
(**electroluminescent** devices formed using semiconductor nanocrystals as electron transport media and method of making such **electroluminescent** devices)

L38 ANSWER 21 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1996:428158 HCAPLUS
DOCUMENT NUMBER: 125:71384
TITLE: Semiconductor electroluminescent device
INVENTOR(S): Sumino, Masayoshi
PATENT ASSIGNEE(S): Nippon Electric Co, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08088444	A2	19960402	JP 1994-225127	19940920
PRIORITY APPLN. INFO.:			JP 1994-225127	19940920

AB The device consists of a substrate, a high-resistance multilayered buffer **layer** for decreased dislocations in the grown **layer**, and n- and p-type electrodes. The device can consist of a high-resistance GaAs substrate, an undoped distorted superlattice **layer** of an alternating laminate of ZnSe and ZnSSe **layers**, an undoped ZnSe **layer**, a buffer **layer**, and electrodes. The device has a long lifetime.

IT **12032-36-9**, Magnesium sulfide
(long-lifetime semiconductor **electroluminescent** device having multilayered buffer **layer**)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H01S003-18
ICS H01L033-00

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

ST semiconductor electroluminescent device buffer **layer**; zinc sulfide selenide electroluminescent device; gallium arsenide substrate electroluminescent device

IT Electroluminescent devices
(long-lifetime semiconductor electroluminescent device having multilayered buffer **layer**)

IT Group IIB element chalcogenides
(long-lifetime semiconductor electroluminescent device having multilayered buffer **layer**)

IT 1315-09-9, Zinc selenide **12032-36-9**, Magnesium sulfide 56780-29-1, Cadmium zinc selenide sulfide ((Cd,Zn)(Se,S)) 59989-74-1, Zinc selenide sulfide (Zn(Se,S)) 158346-21-5, Cadmium zinc selenide
(long-lifetime semiconductor **electroluminescent** device having multilayered buffer **layer**)

IT 1303-00-0, Gallium arsenide, uses 1344-28-1, Aluminum oxide, uses 7440-21-3, Silicon, uses 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses
(substrate; long-lifetime semiconductor electroluminescent device having multilayered buffer **layer**)

L38 ANSWER 22 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1995:605671 HCAPLUS
DOCUMENT NUMBER: 122:326053
TITLE: Semiconductor light-emitting elements
INVENTOR(S): Kondo, Masafumi; Hosobane, Hiroyuki; Sugawara, Akyoshi
PATENT ASSIGNEE(S): Sharp Kk, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 07079017	A2	19950320	JP 1993-220931	1993 0906
JP 2962639	B2	19991012		

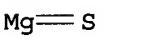
PRIORITY APPLN. INFO.: JP 1993-220931 1993 0906

AB A green (or blue) emitting element comprises: (1) a Group III-V substrate; (2) a Group II-VI DH laminate; and (3) a Group II-VI carrier-injection **layer**, wherein a Group III-V heterojunction **layer** is formed pattern-wisely between (2) and (3).

IT **12032-36-9**, Magnesium sulfide (MgS)
(blue or green emitting DH lasers or **LED** with heterobarrier **layer**)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)



IC ICM H01L033-00
ICS H01S003-18

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

IT Electroluminescent devices
(blue or green emitting DH LED with heterobarrier **layer**)

IT Lasers
(blue or green emitting DH with heterobarrier **layer**)

IT 1303-00-0, Gallium arsenide, uses 1306-23-6, Cadmium sulfide (CdS), uses 1313-04-8, Magnesium selenide (MgSe) 1315-09-9, Zinc selenide **12032-36-9**, Magnesium sulfide (MgS) 12063-98-8, Gallium phosphide, uses 22398-80-7, Indium phosphide, uses 59989-74-1, Zinc selenide sulfide (Zn(Se,S)) 135260-03-6, Magnesium zinc selenide (MgZnSe) 137575-57-6, Magnesium zinc selenide sulfide ((Mg,Zn)(Se,S)) 158346-21-5, Cadmium zinc selenide
(blue or green emitting DH lasers or **LED** with heterobarrier **layer**)

L38 ANSWER 23 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:546754 HCAPLUS

DOCUMENT NUMBER: 123:354210

TITLE: Formation of a multilayered structure for electroluminescent device

INVENTOR(S): Soininen, Erkki; Leppaenen, Marja

PATENT ASSIGNEE(S): Planar International Ltd., Finland

SOURCE: Finn., 35 pp.
CODEN: FIXXAP

DOCUMENT TYPE: Patent

LANGUAGE: Finnish

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

FI 92897	B	19940930	FI 1993-3278	1993 0720
FI 92897	C	19950110		
DE 4425507	A1	19950126	DE 1994-4425507	1994 0720
JP 07106065	A2	19950421	JP 1994-167933	1994 0720
JP 3024048	B2	20000321		
US 5496597	A	19960305	US 1994-277818	1994 0720

PRIORITY APPLN. INFO.: FI 1993-3278 A 1993 0720

AB The title device comprises at least one electroluminescent **layer** consisting of alkaline earth metal sulfide and at least one insulating **layer** consisting of metal oxide. The insulating **layer** is deposited on the electroluminescent **layer** from an organometallic complex in which the metal atom is bound by an acid..

IT **12032-36-9**, Magnesium sulfide
(formation of a multilayered structure for **electroluminescent** device)

RN 12032-36-9 HCAPLUS

CN Magnesium sulfide (MgS) (6CI, 8CI, 9CI) (CA INDEX NAME)

Mg=S

IC ICM H05B033-14
ICS H05B033-22; C23C014-22

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)

IT 1314-96-1, Strontium sulfide **12032-36-9**, Magnesium sulfide 20548-54-3, Calcium sulfide
(formation of a multilayered structure for **electroluminescent** device)

L38 ANSWER 24 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1994:641315 HCAPLUS

DOCUMENT NUMBER: 121:241315

TITLE: Light-emitting diodes made from cadmium selenide nanocrystals and a semiconducting polymer

AUTHOR(S): Colvin, V. L.; Schlamp, M. C.; Allvisatos, A. P.

CORPORATE SOURCE: Department Chemistry, University California, Berkeley, CA, 94720, USA

SOURCE: Nature (London, United Kingdom) (1994), 370(6488), 354-7
CODEN: NATUAS; ISSN: 0028-0836

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Electroluminescent **devices** have been developed recently that are based on new materials such as porous silicon and semiconducting polymers. By taking advantage of developments in the preparation and characterization of direct-gap semicond. nanocrystals, and electroluminescent polymers, we have now constructed a hybrid organic/**inorg.** **electroluminescent device.** Light emission arises from the recombination of holes injected into a **layer** of semiconducting p-paraphenylene vinylene (PPV) with electrons injected into a multilayer film of cadmium selenide nanocrystals. Close matching of the emitting **layer** of nanocrystals with the work function of the metal contact leads to an operating voltage of only 4 V. At low voltages emission from the CdSe **layer** occurs. Because of the quantum size effect the color of this emission can be varied from red to yellow by changing the nanocrystal size. At higher voltages green emission from the polymer **layer** predominates. Thus this **device** has a degree o voltage tunability of color.

CC 73-11 (**Optical**, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 76

IT 7439-95-4, **Magnesium**, uses 7440-22-4, Silver, uses
(light-emitting diodes made from cadmium selenide nanocrystals and semiconducting polymer with contact containing)

L38 ANSWER 25 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1993:263455 HCAPLUS
DOCUMENT NUMBER: 118:263455
TITLE: White **light-emitting** phosphor compositions
INVENTOR(S): Jeong, Il Hyeok; Park, Man Gi
PATENT ASSIGNEE(S): Samsung Electron Devices Co., Ltd., S. Korea
SOURCE: Ger. Offen., 8 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4212170	A1	19930225	DE 1992-4212170	19920410
JP 05117655	A2	19930514	JP 1992-75008	19920331
PRIORITY APPLN. INFO.:			KR 1991-14544 A	19910822

AB The title phosphor compns. comprise a yellow-emitting phosphor selected from Ca1-xMgxS:Mn and/or Ca1-xMgxS:Mn,Sc ($0 \leq x \leq 0.05$), a blue-emitting phosphor selected from ZnS:Ag, ZnS:Ag,Ga, ZnS:Ag,Cl, and/or ZnS:Ag,Ga,Cl, and optionally a green-emitting phosphor selected from ZnS:Cu,Cl or from InBO3:Tb, Zn2SiO4:Mn, and/or Zn2SiO4:Mn,As.

IT **107762-61-8**, Calcium magnesium sulfide (Ca0.98Mg0.02S)
148047-55-6, Calcium magnesium sulfide (Ca0.95Mg0.05S)

148047-56-7, Calcium magnesium sulfide (Ca0.97Mg0.03S)
(phosphors based on, white **light-emitting** compns. containing)
RN 107762-61-8 HCAPLUS
CN Calcium magnesium sulfide (Ca0.98Mg0.02S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.98	7440-70-2
Mg	0.02	7439-95-4

RN 148047-55-6 HCAPLUS
CN Calcium magnesium sulfide (Ca0.95Mg0.05S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.95	7440-70-2
Mg	0.05	7439-95-4

RN 148047-56-7 HCAPLUS
CN Calcium magnesium sulfide (Ca0.97Mg0.03S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.97	7440-70-2
Mg	0.03	7439-95-4

IC ICM H01J029-20
ICS H01J001-63; C09K011-56
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT Phosphors
(white-**light-emitting**, compns. for)
IT 7439-96-5, Manganese, uses 7440-20-2, Scandium, uses 7440-22-4, Silver, uses 7440-27-9, Terbium, uses 7440-38-2, Arsenic, uses 7440-50-8, Copper, uses 7440-55-3, Gallium, uses 7782-50-5, Chlorine, uses
(phosphors activated with, white **light-emitting** compns. containing)
IT 1314-98-3, Zinc sulfide, uses
(phosphors based on, white **light-emitting** compns. containing)
IT 13597-65-4, Zinc silicate (Zn2SiO4) 13709-93-8, Indium borate (InBO3) 20548-54-3, Calcium sulfide (CaS) **107762-61-8**, Calcium magnesium sulfide (Ca0.98Mg0.02S) **148047-55-6**, Calcium magnesium sulfide (Ca0.95Mg0.05S) **148047-56-7**, Calcium magnesium sulfide (Ca0.97Mg0.03S)
(phosphors based on, white **light-emitting** compns. containing)

L38 ANSWER 26 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1992:560320 HCAPLUS
DOCUMENT NUMBER: 117:160320
TITLE: White-**light-emitting**

luminous substance
INVENTOR(S): Jeong, Il Hyeok; Choi, Jong Sik
PATENT ASSIGNEE(S): Samsung Electron Devices Co., Ltd., S. Korea
SOURCE: Ger. Offen., 5 pp.
CODEN: GWXXBX
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
DE 4136311	A1	19920507	DE 1991-4136311	19911104
CN 1061034	A	19920513	CN 1991-108395	19911102

PRIORITY APPLN. INFO.: KR 1990-17776 A 19901102

AB The title substance comprise a blue-emitting ZnS-based luminous material (e.g., ZnS:Ag; ZnS:Ag, Cl; and/or ZnS:Ag, Ga) and a yellow-emitting CaS-based luminous material (e.g., Ca1-xMgxS:Mn, Ce; or a mixture of Ca1-xMgxS:Ce and Ca1-xMgxS:Mn; $0 \leq x \leq 0.5$).
IT **143712-06-5**, Calcium magnesium sulfide (Ca0.5-1Mg0-0.5S)
(white **light emitting** luminous material containing)
RN 143712-06-5 HCAPLUS
CN Calcium magnesium sulfide (Ca0.5-1Mg0-0.5S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.5 - 1	7440-70-2
Mg	0 - 0.5	7439-95-4

IC ICM C09K011-56
ICS H01J001-63
ICA H01J029-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT Phosphors
(white-**light-emitting**, containing calcium sulfide- and zinc sulfide-based phosphors)
IT 1314-98-3, Zinc sulfide, uses
(white **light emitting** luminous material containing)
IT 20548-54-3, Calcium sulfide **143712-06-5**, Calcium magnesium sulfide (Ca0.5-1Mg0-0.5S)
(white **light emitting** luminous material containing)
IT 7439-96-5, Manganese, uses 7440-22-4, Silver, uses 7440-45-1, Cerium, uses 7440-55-3, Gallium, uses 7782-50-5, Chlorine, uses
(white **light emitting** luminous material

containing calcium sulfide phosphors activated with)

L38 ANSWER 27 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1989:467657 HCAPLUS
DOCUMENT NUMBER: 111:67657
TITLE: Alkaline earth sulfide mixed crystal-based **electroluminescent** devices
INVENTOR(S): Yoshioka, Toshihiro
PATENT ASSIGNEE(S): NEC Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01027194	A2	19890130	JP 1987-183920	19870722

PRIORITY APPLN. INFO.: JP 1987-183920 19870722

AB A thin-film **electroluminescent** (EL) device has a **light-emitting** layer comprising an Eu-activated mixed crystal of MgS and CaS. An EL device having the **light-emitting** layer emits red light with highly pure color and brightness at high efficiency. A Mg0.4Ca0.6S:Eu layer was deposited on a glass substrate bearing a transparent electrode, a 1st insulating Ta2O5 layer was formed by electron beam evaporation in vacuum, and coated with a 2nd insulating Al2O3layer and then with an Al electrode to give an EL device emitting highly pure red light at improved efficiency as compared to an EL device having a MgS:Eu **light-emitting** layer.

IT **121834-31-9**, Calcium magnesium sulfide (Ca0.6Mg0.4S)
(red-emitting layer for **electroluminescent** devices from europium-activated)
RN 121834-31-9 HCAPLUS
CN Calcium magnesium sulfide (Ca0.6Mg0.4S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.6	7440-70-2
Mg	0.4	7439-95-4

IC ICM H05B033-14
ICS C09K011-00; C09K011-56
CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **electroluminescent** device thin film; magnesium calcium sulfide **electroluminescent** device
IT **Electroluminescent** devices
(film, red-emitting layer for, from europium-activated calcium magnesium sulfide)
IT 7440-53-1, Europium, uses and miscellaneous

(red-emitting layer for **electroluminescent** devices from calcium magnesium sulfide activated with)
IT **121834-31-9**, Calcium magnesium sulfide (Ca0.6Mg0.4S)
(red-emitting layer for **electroluminescent** devices from europium-activated)

L38 ANSWER 28 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1987:467098 HCAPLUS
DOCUMENT NUMBER: 107:67098
TITLE: Alkaline-earth sulfide luminophors activated with tin
AUTHOR(S): Dafinova, R.
CORPORATE SOURCE: Dep. Inorg. Chem., Fac. Chim., Bulg.
SOURCE: Godishnik na Sofiiskiya Universitet Sv. Kliment Okhridski, Khimicheski Fakultet (1986), Volume Date 1982, 76, 3-7
CODEN: GSKFAL; ISSN: 0584-0317
DOCUMENT TYPE: Journal
LANGUAGE: English
AB **Luminescent** spectra and afterglow were studied for Sn-activated alkaline earth sulfides containing Ca, Sr, Mg, and Ba. Sn, as the activator, creates **luminescent** centers with an emission in the short or long wave spectral range, depending on the composition of the alkaline earth sulfides.
IT **109676-59-7**
(**luminescent** spectra and afterglow of tin-activated)
RN 109676-59-7 HCAPLUS
CN Calcium magnesium sulfide (Ca0.88Mg0.12S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.88	7440-70-2
Mg	0.12	7439-95-4

CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
ST **luminescence** afterglow alk earth sulfide tin
IT **Luminescence**
(of tin-activated alkaline earth sulfides)
IT **Luminescence**
(afterglow, of tin-activated alkaline earth sulfides)
IT Alkaline earth chalcogenides
(sulfides, **luminescent** spectra and afterglow of tin-activated)
IT 7440-31-5, Tin, properties
(**luminescent** spectra and afterglow of alkaline earth sulfides activated with)
IT 1314-96-1, Strontium sulfide 109676-44-0 109676-56-4
109676-59-7 109676-60-0 109676-76-8
(**luminescent** spectra and afterglow of tin-activated)

L38 ANSWER 29 OF 29 HCAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1987:165770 HCAPLUS
DOCUMENT NUMBER: 106:165770
TITLE: Long-afterglow white phosphors
INVENTOR(S): Sato, Atsukazu; Takatsuji, Kazuhiko
PATENT ASSIGNEE(S): Mitsui Mining and Smelting Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61192787	A2	19860827	JP 1985-32841	19850222

PRIORITY APPLN. INFO.: JP 1985-32841 19850222

AB A long-afterglow orange phosphor of the general formula Ca1-xMgxS:Mn,Sc (0 ≤ x ≤ 0.04) and a long-afterglow blue phosphor of the general formula CaS:Cu(y mol%), M (0.05 ≤ y ≤ 0.5; M = Li, Na, K) are mixed to give the title phosphors. The phosphors show high luminosity, are fabricated at low cost, and are not poisonous. The phosphors are hence useful in cathode ray tubes for display. Thus, an orange phosphor CaS:Mn(0.2 mol%), Sc(0.1 mol%) 60 was mixed with a blue phosphor CaS:Cu(0.15 mol%), Na 40 parts to obtain a long-afterglow white phosphor, which showed a **luminescence** efficiency 14% and an afterglow time constant (τ1/10) 21 ms by excitation with a 27-kV electron beam.

IT **107762-62-9**
(phosphor from manganese- and scandium-, long afterglow white phosphor from mixture containing)

RN 107762-62-9 HCAPLUS
CN Calcium magnesium sulfide (Ca0.99Mg0.01S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.99	7440-70-2
Mg	0.01	7439-95-4

IT **107762-60-7 107762-61-8**
(phosphor from manganese- and scandium-containing, long afterglow white phosphor from mixture containing)

RN 107762-60-7 HCAPLUS
CN Calcium magnesium sulfide (Ca0.96Mg0.04S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
S	1	7704-34-9
Ca	0.96	7440-70-2
Mg	0.04	7439-95-4

RN 107762-61-8 HCAPLUS
CN Calcium magnesium sulfide (Ca0.98Mg0.02S) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

S	1	7704-34-9
Ca	0.98	7440-70-2
Mg	0.02	7439-95-4

IC ICM C09K011-08
ICS H01J029-20
CC 73-5 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
IT **107762-62-9**
(phosphor from manganese- and scandium-, long afterglow white phosphor from mixture containing)
IT **107762-60-7 107762-61-8**
(phosphor from manganese- and scandium-containing, long afterglow white phosphor from mixture containing)